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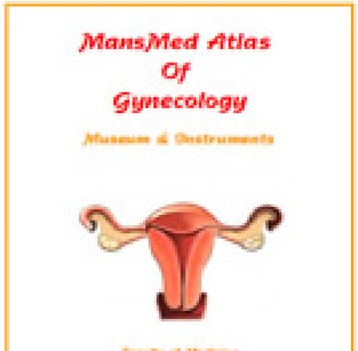
MansMed Forums

ATLAS

Welcome to MansMed Forums


MansMed Atlas
Of
Gynecology
Museum & Instruments

falling A.P.A.R.T

مهم Para *

مهم Pathology *

+ فيزيا (١) ← كميتي

+ فسيولوجي (٢)

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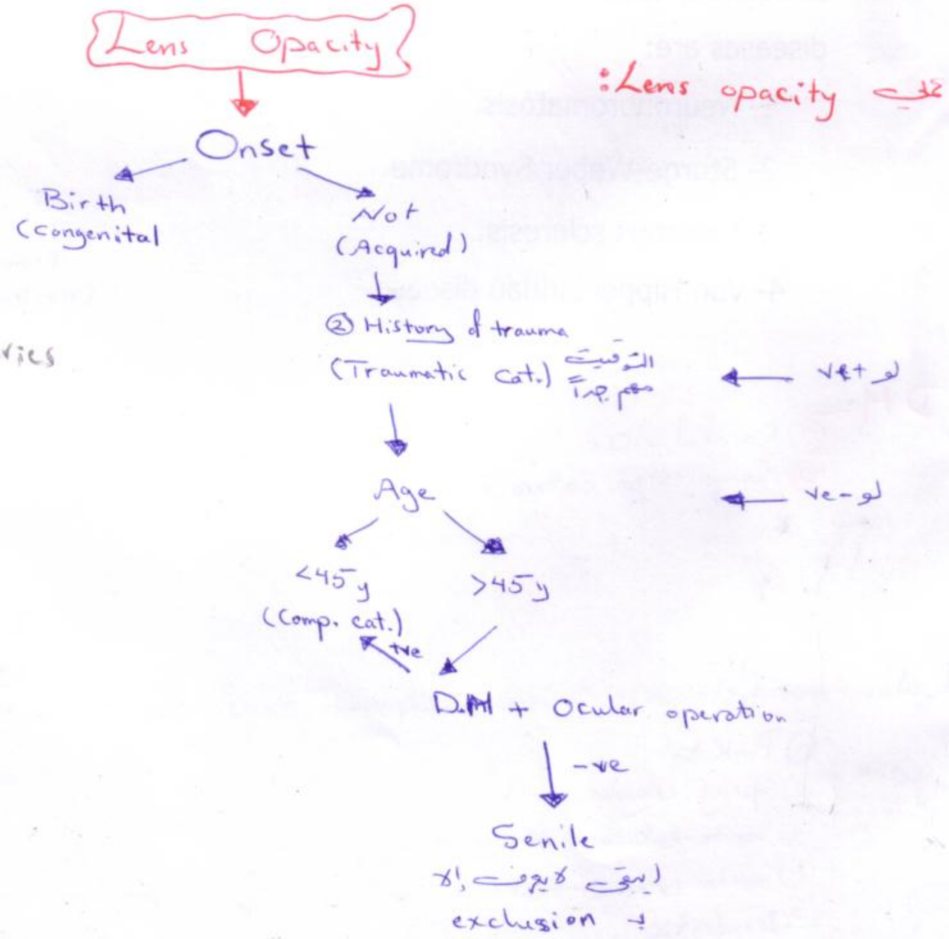


Summary

① → Dysthyroid

② → Scotoma

③ → VA measurement

(4) → injuries

→ Oral Q

→

خد أ الأربعاء ٧ ¼ – ٩ (رمد)

السبت ٧ ¼ (رمد) ← ١٢ (رمد)

الأحد ٧ ¼ (باطنة) ١٢ (باطنة) (١ ¼ رمد)

الاثنين ٧ ¼ (باطنة)

الثلاثاء ١٢ (رمد)

[illegible] torch

I- Anatomy of the Eye

A) Coats of the Eye

1- Outer protective coat : Cornea & sclera.

2- Middle Nutritive coat : Iris, ciliary body & Choroid.

3- Inner Nervous coat : Retina.

B) Chambers & Contents

Anterior chamber : Between the cornea & iris & contains aqueous humor.

Posterior chamber : between the iris & lens & contains aqueous humor.

Vitreous chamber : Between the lens & retina & contains vitreous humor.

Crystalline lens : Between the iris & vitreous & suspended by the zonule.

C) Adenexa of the Eye

These are accessory structures related to the eye ball

1. Eye lids.
2. Conjunctiva.
3. Lacrimal apparatus.
4. Extra-ocular ms.
5. Orbit.

D) Blood Supply of the Eye Ball

1. Arterial : from the ophthalmic artery (from the internal carotid)

2. Venous : into the ophthalmic veins (into the cavernous sinus)

it is divided into:

1. Retinal Circulation : i. Arterial: CRA ii. Venous: CRV

2. Uveal circulation : i. Arterial a) Posterior cil.a: 10-20 short & 2 long

b) Anterior Ciliary arteries : 7

iii. Venous: vortex veins & anterior cil.veins

E) Nerve Supply

Sensory: The TRIGEMINAL nerve (the ophthalmic division): through

- 6-10 short ciliary nerves.
- 2 long ciliary nerves.

Motor

1- OCULOMOTOR 2- TROCHLEAR & 3- ABUDCENT **nerves**

The diopteric power of the normal eye:

The diopteric power of the eye is approximately 60 diopters (D). It is determined by:

- The power of the cornea : which is about 42D
- The power of the lens : which is 18 D without accommodation.

The refractive media of the eyeball are:

- The cornea; refractive index =1.37
- The aqueous: refractive index = 1.34
- The lens: refractive index = 1.42
- The vitreous: refractive index =1.33

The Visual Pathway

1-The visual pathway starts at the ***photoreceptors*** (rods and cons) in the retina. They synapse with the bipolar cells, which in turn synapse with the ganglion cells run in the nerve fiber layer of the retina and converge to form the optic nerve (second cranial nerve).

2-Axons in the *optic nerve* run to the ***optic chiasma*** where nasal fibers of each nerve cross each other to reach the optic tract of the opposite side. The temporal fibers pass uncrossed to the optic tract of the same side.

3-Fibers of the optic tract reach the lateral geniculate body (LGB) where they synapse. Axons from ***LGB*** spread out to form the optic radiation that passes through a broad area of the temporal and parietal lobes of the brain.

4-Fibers of the optic radiation end in ***the visual cortex*** in the occipital lobe. The visual cortex includes the primary visual area (area 17) and visual association areas (prestriate cortex, area t8 of Brodmann & parastriate cortex, area 19 of Brodmann).

PROTECTIVE MECHANISMS OF THE EYE

Since the eye is such an important organ, it is protected from trauma by several mechanisms.

1-The orbits

2-The retrobulbar pad of fat as a shock absorber against the orbital bones.

3-The lids:

i-Closure of the lids during sleep prevents corneal dryness and ulceration.
ii-Blinking Reflex .
iii-The eye lashes and the eyebrows prevent sweat from dribbling inside the eye.

4-The tears:

i- The precorneal tear film prevents corneal dryness and ulceration.
ii- Tears have an anti-microbial function through its lysozyme content.

The cornea:

i-Corneal sensation (being richly supplied by sensory n.) initiates reflex blinking .
ii-Bells phenomenon

II) Embryology of the Eye

Origin of the Eye:

1) Neural ectoderm: gives rise to.

(i) Retina & op. Nerve.

(ii) Definitive vitreous.

(iii) Zonule of the lens.

(iv) Epithelium of the iris & C.B.

2) Surface ectoderm: gives rise to

(i) Lens.

(ii) Lids: skin, glands & lashes.

(iii) Epithelium of cornea, conj. Lac. App.

(iv) Lacrimal & conjunctival glands.

3) Mesoderm: Gives rise to

(i) Outer & middle coats of the eye (except epith).

(ii) Blood vessels of the eye.

(iii) Sheath of the op. nerve.

(iv) Extra ocular muscles.

(v) Orbital tissues & walls.

(vi) Connective tissues of the lids, conjunctiva and lac. apparatus.

The Eye Lids

* Gross anatomy

The eyelids are 2 movable muco-cutaneous folds that meet at the canthi.

Extension:

The upper lid extends to the eye brow while the lower lid passes without a line of demarcation into the cheek

Position:

- UL: covers the upper 1/6 of the cornea.
- LL: is at the level of the limbus

The palpebral fissure:

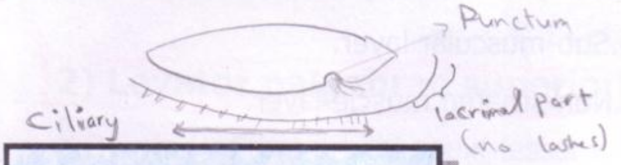
It is the space between the lid margins when the lids are open.

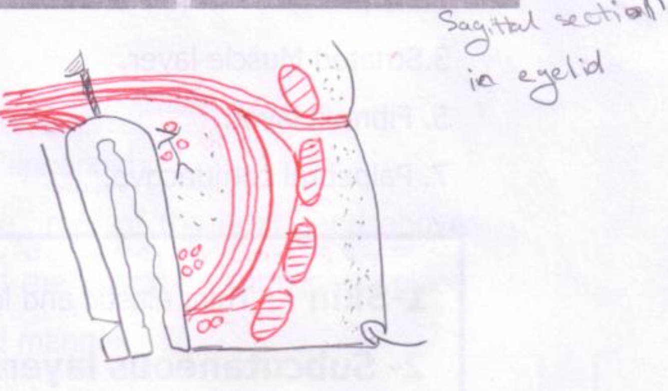
Shape: elliptical.

Angle = Canthi.

Size : 1- Horizontally : about 30 mm (from medial canthus to lateral canthus)

2- Vertically : about 10 mm





* The lid margin

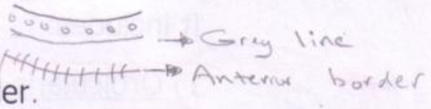
It is the free margin of the lid.

Width : 2 –3 mm.

Parts : The lid margin is divided by the lacrimal papilla into:

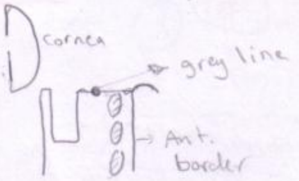
1- Ciliary Part: from the lacrimal papilla to the lateral canthus & shows:

i- Anterior border : Rounded & carry the lashes.



ii- Grey line: - Just posterior to the anterior boarder.

- Important anatomical and surgical landmark.



Incision here opens into the submascular layer and can split the lid into a posterior portion containing the tarsal plate and conjunctiva and anterior portion containing the orbicularis oculi muscle, skin and hair follicle

iii- Opening of Meibomian glands (White line).

vi- Posterior boarder: sharp (its sharpness is important for conduction of tears.

2- Lacrimal Part: from the lacrimal papilla to the medial canthus (6 mm).

No border + No lashes + No glands

* Lashes: Modified hair

	Number	*Direction*
In upper lid	150	upward, forward & laterally
In lower lid	75	downward, forward & laterally

** Minute anatomy*

A sagittal section in the upper eye lid shows:

1.Skin.
2.Subcutaneous layer.
3.Striated Muscle layer.
4.Sub-muscular layer.
5. Fibrous layer.
6.Non-striated muscle layer.
7. Palpebral conjunctiva.

علشان كده من السهل جدا حدوث أي Oedema عكس باقي مناطق الوجه

1-Skin : - Thin, elastic and loosely adherent to the underlying tissues.

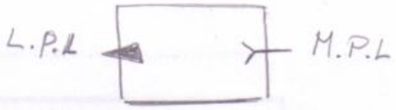
2- Subcutaneous layer: loose CT , devoid of fat.

3- Striated (voluntary) Muscle layer:

It includes:

1) Orbicularis Oculi muscle

It is the sphincter of the lid.



*** Parts:**

1- Palpebral portion:

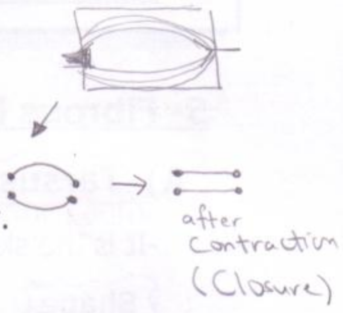
* Origin : from med. Palpebral ligament.

* Insertion : to lateral palpebral ligament

* Action : (i) Blinking.

Prevents ectropion ← (ii) Support lower lid against gravity.

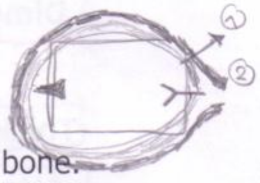
* Parts : 1- Preseptal. 2- Pretarsal.



2- Orbital portion:

* Origin : From ① med. P. ligament & ② nearby bone.

* Insertion : Fibers complete a circle around orbital margin to be inserted to medial p. ligament & nearby bone.



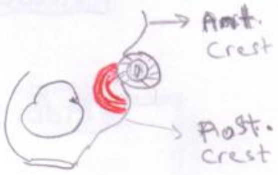
* Action : Forcible closure.

3- Lacrimal portion (Horner's ms = Pars lacrimalis)

* Origin : Posterior lacrimal crest.

* Insertion : Lacrimal fascia.

* Action : contracts → -ve pressure in sac → suction of tears.



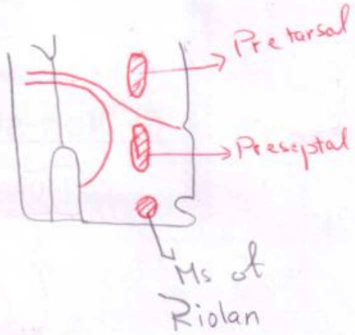
(منظر من فوق)

4- Marginal Portion (ms of Riolan ,Pars ciliaris).

Fine bundle of ms fibers close to the lid margin

* Nerve supply : Facial nerve (7^{th} n.).

* Paralysis : → Lagophthalmos, Epiphora, P ectropion.

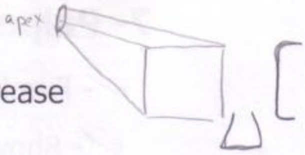


موجودة فقط في upper lid

2) Levator palpebrae superioris:

*** Origin** : From orbital apex(lesser wing of sphenoid).

*** Course** : It passes as ms belly under the roof of the orbit and above the superior rectus ms then (one cm behind the orbital septum) gives place to an aponeurosis that spread in a fan shaped manner

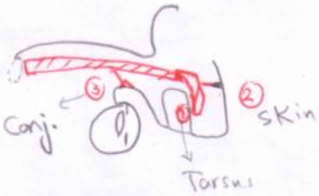


*** Insertion** : 1- Anterior surface of tarsus. 2- Skin: forming a crease 3.Upper fornix. 4.Medial and lat.horns: to Med &L Palp. lig. and nearby bone

* Action : Elevation of upper lid.

* Nerve supply : Oculomotor nerve (3 rd n.)

* Paralysis : Ptosis.

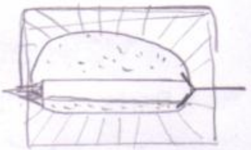


Attachments

Oral: why here?
Most protective area (supported ant. by muscles & Post. by tarsus)

4- Submuscular layer: contains the main blood vessels & nerves

5- Fibrous layer: includes 1- Tarsus 2- Orbital septum



A) Tarsus:

-It is the skeleton of lid.

- **Shape** : D- shaped.
- **Dimensions** : Horizontally : 27-30 mm. (Palpebral fissure فتحة العين)
  Vertically : upper 10 mm & lower 3 mm
- **Thickness** : 1 mm = ½ lid margin
- **Attachment** : - Superiorly : To the levator & Muller's ms
  - Med. & lat.: To the M. & lat. Palpebral ligaments
- **Embedded** in it: 20-30 vertically arranged Meibomain gl.

B) Orbital septum

B) Orbital septum : Thin fibrous membrane extending from the tarsus to the orbital margin

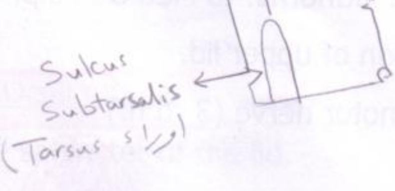
6- Non-striated muscle layer.

Muller's ms : Origin : Orbital apex
Insertion : Upper edge of tarsus.
Action : Help in elevation
Nerve supply : Sympathetic
Paralysis : In Horner's syndrome (ptosis).

7- Palpebral conjunctiva:

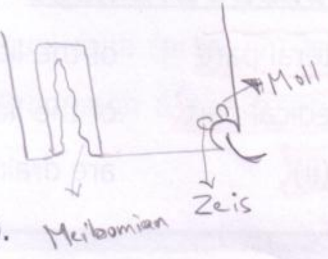
✓ - Firmly adherent to the tarsus

✓ - Shows sulcus- subtarsalis (2 mm from the lid margin).



Glands of Lid

(i) Meibomian Gland:



It is a modified sebaceous glands.

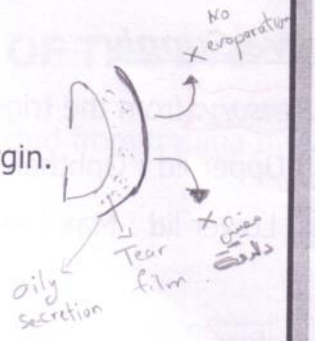
Number : 20 – 30 (in the upper lid).

Site : in the Tarsus (vertically arranged).

Opening : On the lid margin.

Secretion : Oily.

Function : of oily secretion.



→1- Prevent overflow of tears over the lid margin.

→2-Retard evaporation of tears.

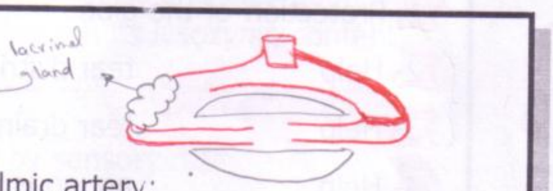
(ii) Zies Gland:

Modified sebaceous gland related to lashes (for its lubrication).

(iii) Moll's gland:

Modified. Sweat gland related to lashes (for its lubrication).

Blood supply



Arteries

From the terminal branches of the ophthalmic artery:

- Medial palpebral artery.
- Lateral palpebral artery.

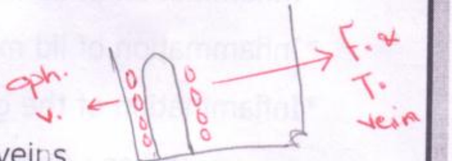
These vessels anastomosed freely to from 2 arches

Upper arch: along the upper border of tarsus

Lower arch: near the lid margin

Veins

: start from 2 plexuses



Pre tarsal plexus → to the facial & temporal veins.

Post-tarsal plexus → to the ophthalmic vein.

Lymphatic Drainage

(i) Lateral part of the lid is drained to the pre-auricular & parotid L.N.

(ii) Medical part of the lid is drained to submaxillary lymph nodes

(i) & (ii) are drained to the deep cervical L.N.

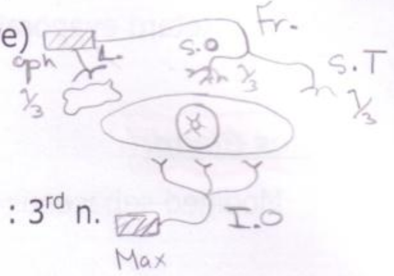
Nerve Supply

1) Sensory: from the trigeminal nerve

- (i) Upper lid : Ophthalmic nerve (supra orbital, supra trochlear and lacirmal)
- (ii) Lower lid : Maxillary nerve (infra – orbital nerve)

2) Motor:

- (i) Orbicularis : 7th n.
- (ii) Levator : 3rd n.
- (iii) Muller's : sympathetic fibers.



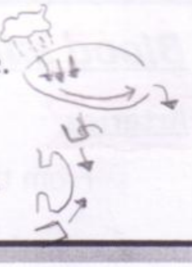
VIII) Functions:

1. Protection of the globe from external injury.

2- Help tear distribution → proper wetting of the eye.

3- Help tear drainage (through the lacrimal pump).

4- Help aqueous drainage (through ocular massage).



Inflammation of the Lid

*Inflammation of lid itself: lid abscess.

*Inflammation of lid margin : Blepharitis

*Inflammation of the glands:

i) Zies : Stye or Hordeolum externum

ii) Miebomian : if acute: Hordeolum internum

If chronic : chalazion

* Blepharitis *

Definition *:* It is chronic inflammation of lid margin

Predisposing factors:

(I) General

1. Malnutrition & avitanminosis
2. Old age
3. D.M.

(II) Local

1. Dusty hot atmoshere
2. Uncorrected errors of refraction (ميلبسش النظارة بتاعته)
3. Bad hygiene (مبيغسلش وشه)

Types :

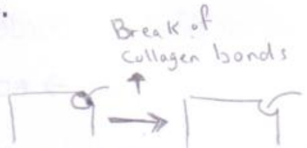
1. Squamous 2- Ulcerative 3- Angular 4. Parasitic

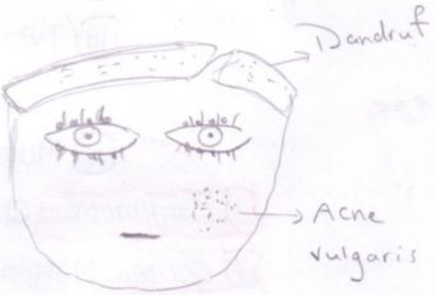
I) Squamous Blepharitis (Scaly Blepharitis)

Etiology :

As a part of generalized seborrhea. → Triad (Dandruf, Acne vulgaris & S.B)

Infection by weak organisms. Which split the Zies gland secretion (lipids) producing irritant fatty acids.

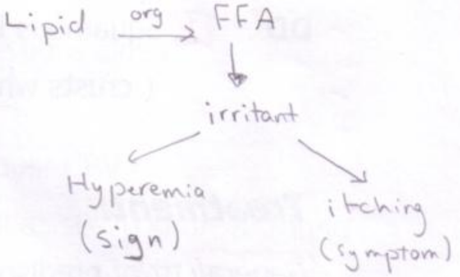




Clinical picture:

* Symptoms : Itching & frequent falling of hair.

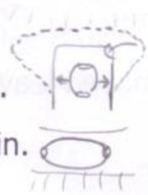
*Sings: Small, white scales on lid margin,
if removed, shows hyperemic lid margin.



Complication:

1- Typlosis: thicknening of lid margin.

2- Permanent redness of the lid margin.



Treatment:

General: ttt of the predisposing factors.

Local : كغسول (i) *Lotion:* Na HCO 3% to remove the scales.

(ii) *Antibiotics & steroids* (Anti-inf) → لا أخاف منه → because weak organism.

قبل أول خطوة كلشان أتخلص من sebum بواسطة الغسول (iii) *Lid massage:* to squeeze the Zies gland

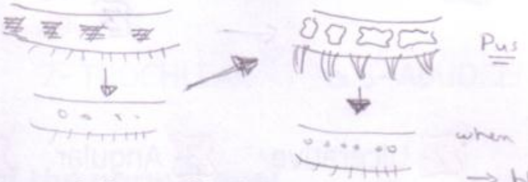
II) Ulcerative Blepharitis

Written
Imp. هام

Etiology:

Predisposing factors:as before.

Exiting Factors : Infection of the lid margin by staph. Aureus → secrete necrotizing toxin → pyogenic organism



when forcibly removed → bleeding ulcers

Clinical picture:

** Symptoms:*

زي الي فات - Itching & frequent falling of lashes.

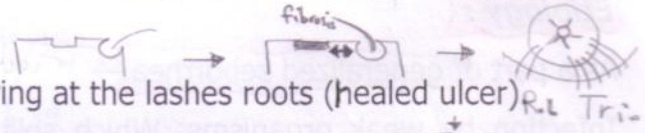
- Burning sensation.

* Signs: Lashes are glued together by yellow crusts

→ When removed (the cursts) → they leave minute bleeding ulcers.

Oral
Imp. هام

Complications:



1) Lids: (i) Trichiasis: due to scarring at the lashes roots (healed ulcer).

(ii) Madarosis: due to destruction of hair follicles. ← Permenant loss of lashes

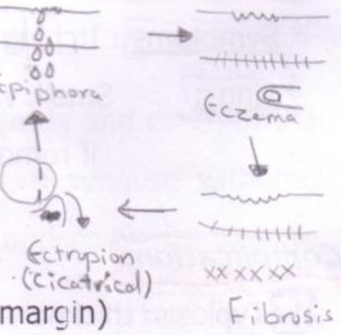
(iii) Tylosis: with irregular posterior border → epiphora → eczema → cicatricial ectropion → epiphora (Vicious circle)

(iv) Multiple styes

2) Conjunctiva: Chronic conjunctivitis

3) Cornea: Marginal corneal ulcers (Punctate keratitis)

Punctate Keratitis ← staph enters ← drop of epithelium ← rubbing lashes



DD 1. Squamous blepharitis 2-Conjunctivitis

(crusts when removed leaves an intact lid margin)

Treatment:

General: ttt of predisposing factors (DM) + systemic antibiotics

Local: lid hygiene and elimination of infection .

(i) Lotion: NahCO3 3% to remove the crusts.

(ii) Antibiotics: drops & ointment.

(iii) frequent lid massage :to evacuate m secretions

(iiii) Hot fomentation.

نصيحتان للمريض:

1) يضع المرهم من داخل الجفن مش على margin لأن مخزن البكتيريا جوه follicle of hair

2) لا يوقف استخدام المرهم بعد التحسن الظاهري

نصيحة للدكتور:

1) Don't use electrolysis لأن ده هيساعد spread of infection

استخدم ← Epilation ← وحتى لو طلع الرمش تاني هيكون infection راح (بعد ٤ أسابيع)

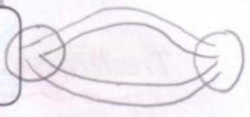
N.B.: as the organism is hidden in the lashes root:

The ointument Should be rubbed well against the lid margin.

ttt should continue 2-3 weeks after apparent cure.

Morax-Axenfield
↓
virulence [illegible]

III) Angular Blepharo-conjuctivitis



(hypopyon ulcer [illegible])

Etiology: Infection of the lid margin by Morax – Axenfeld diplobacillus (which is Gram –ve organism secreting proteolytic enzyme → epithelial maceration).

Clinical picture:

Symptoms: (Itching + Burning sensation as ulcerative) + Discharge. of mucous from inflamed goblet cells.

Signs: Inner & outer canthi are ① macerated and ② hyperemic.

Complication

1. Marginal corneal ulcer ↓ Toxins destroy intact epithelium → Morax enters
2. Angular conjunctivitis
3. Ankyloblepharon

علاج رخيص جداً **Treatment:**

1. Zinc sulfate drops ½% t.d.s (to inactivate the proteolytic enzyme).
2. بجنيه Teramycin ointment ½% (to kill the organism).
3. بجنيه Gentian violet 1% paint (for the macerated skin). لعلاج الجلد المتقشر لمنع infection 2ry

Tear → lysozym → Kill the organism.

Why angular?

Due to relative tear deficiency at the angle

(i.e, deficiency of lysozyme which has antibacterial effect)

Oral

Why sweat glands not inflamed? PH isn't suitable for infection

IV) Parsitic Blepharitis

Etiology: Infestation of lid margin with 1. Pubic louse
2. Rarely head louse
3. Demodex folliculorum

Clinical picture:

The lid margin shows black nits

(cemented to the roots of lashes by alkaline cement substance).

Treatment:

1. General: General hygiene.

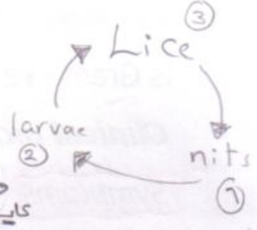
2. Local:

i- Acidic lotion (acetic acid 2%): to loosen the nits.

ii- Yellow oxide of mercury ointment 1% : to kill the larvae

iii- Trimming of lashes may help in resistant cases. → واحدمش عايز يسمعي

للتخلص من المريض شكرأبدي

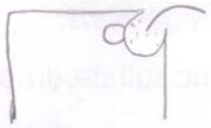


⑤ Allergic blephritis

⑥ Specific blepharitis → T.B → syphilis

Inflammation of the Glands

STYE



Definition: it is acute suppurative inflammation of Zies gland.

Etiology:

(i) *Predisposing factors:* as in blepharitis.

(ii) *Organism:* Staph aureus.

Clinical picture:

Symptoms: Painful, red lid swelling. pulsating (نقح)

(pain at first is dull – and later throbbing due to pus formation)

Signs:

Pain on Pressure

First → red, tender swellng with diffuse edema.

Later → pus accumulates & point at a lash root.

Sure sign yellowish pointing at root of lash

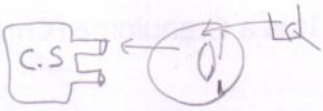
Complications:

i- Destruction of hair follicles → Madarosis. أي كدم → fall of only inflamed follicle

يبقى محترم في حالة D.M

ii- Cavernous sinus thrombosis.

iii-Orbital cellulitis.



Treatment:

General: (i) ttt of predisposing factors.
(ii) Systemic antibiotics.

Local: (i) Hot fomentation.
(ii) Topical antibiotics.

> * *When pointing occurs:* drain the pus by:
>
> Epilation + gentle pressure (don't squeeze). → Danger of C.S thrombosis
>
> Horizontal incision (less fibrosis than vertical one). → irregular posterior border ↓ Epiphora ↓ V.C
>
> → Due to horizontal direction of fibers.

Hordeolum Internum

Written شفهي

Definition :it is acute suppurative inflammation of Meib. Glands.

Etiology:

1- De novo 2- Infected chalazion (Acute on top of chronic)

Clinical Picture :

Symptoms: as stye

Signs: as stye But pointing occurs : either on

i- Palpebral conjunctiva

ii- Lid margin : behind the gray line

DD : from Stye

Treatment as Stye But: Incision : vertical on conjunctival side

Written very very important

CHALAZION

obst
↓
Retention
↓
Distention
↓
Leak

Definition: It is a Granuloma (Chronic inflammation) of Meib. gland.

Etiology:

Granuloma as a result of chronic irritation by

1- Low grade infection

2- retained secretion (following duct obstruction)

Obstruction of Meibomian gland ducts: due to

- i- Fibrosis. (most common)
- plug { ii- Dry secretion.
- iii- Desquamated epithelium.

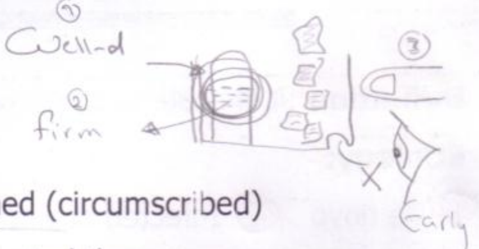
Pathology:

- The retained secretion is irritant & excite a granulomatous reaction which is:
  1. Surrounded by fibrosis.
  2. Contains many giant cells & chronic inflammatory cells.

Clinical picture:

Symptoms: Slowly progresive, painless, disfiguring lid swelling.

Pain occurs only when it becomes infected.



Signs: Tenderless Lid swelling

1- From skin side - Firm

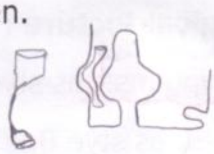
- Well-defined (circumscribed)

- Better palapted than seen.

2- From conj. Side.: (Opposite the chalazion).

(1) Pale (or bluish) area

(2) Surrounded by little congestion.



Fate:

1- Spontaneous resolution.

2- Complications.

St	Ch
acute	Chronic
abscess	granuloma
Zies gland	Meibomian gland

St ch	Ch
Absciss	granuloma
swelling	swelling
rapildly progressed	slowly progressed
Painful	Painless

Complications:

localized suppuration

1.Infection: Infected chalazion (Hordeolum internum)

2.If large (i) Upper lid → ptosis.(↑ weight → mechanical)

(ii) Lower lid → ectropion.(" → ")

(iii) Pressing on globe → astigmatism.

3.Projection to:

- Skin (disfiguring swelling)
- Conj. (irritating granuloma)
- Lid margin (Marginal chalazion)

(The granulation tissue forms only in the duct and projects on the lid margin as a red nodule.)

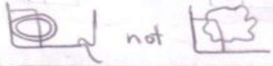
4.Cyst formation (tarsal or meibomian cyst).

5.May be multiple

D.D.:

1- Sebaceous cyst: attached to the skin (chalazion not).

2- Adenoma or carcinoma of M. Gl.: Hard ① → Ill defined ②, rapid recurrence ③ & +ve histopathological ④ examination



3- Stye from infected chalazion.

	Hordeolum externum (syte)	Hordeolum internum
1- Suppuration of	Zies gland	Meibomian gland
2- Related to	A lash root	Not
3- Point on	The skin	The conjunctiva
4- Drainage	Horizontal	Verical conj. incision → because glands are arranged vertically

Oral: Sure sign to differentiate between H.E & H.I → ① Site of pointing
② Look at grey line
→ if anterior to GL: Stye
→ if posterior to // : Chalazion

Treatment IF:

1. Very small: vitamin A, Local antibiotic & Steroid.
2. Large and firm: Incision & scraping operation by spoon.
3. Large and infected: - Antibiotic and Hot fomentation, Drain → by vertical incision to avoid damage of neighbouring glands.
4. Hard or recurrent: excisional biopsy (to exclude malignancy)
5. Marginal: scraping followed by diathermy.(Shaving).
6. Multiple Chalazia: combined excision Of tarsus & conj

(leaving the lower 1/3 of tarsus to avoid lid notching with replacement by mucous graft from the lip)

Deformities of Lid Margin & Lash Position

1- Rubbing lashes 2- Trichiasis 3- Entropion 4- Ectropion

I) Rubbing lashes

Definition:

A condition in which 4 lashes or less are mal – directed & rub against the cornea & bulbar Conjunctiva.

Oral هام جدا

Clinical picture:

1- F.B. sensation F.B 2- Lacrimation 3- Conj. Hyperemia

Treatment:

Indications:
[1] Infection to avoid spread
[2] Stye
[3] Urgent operation

I) Temporary: ***Epilation*** as the lashes grows again in 4-6 weeks.

II) Permanent TTT : destroying the hair follicle either by:

- ⓘ-Chemical coagulation: electrolysis 3 m Amp → for 30 sec by Catholysis (machine)
- ⓘⓘ-Thermal coagulation: either by: - Laser(Argon) Or - Diathermy 30 m Amp → for 3 sec
- ⓘⓘⓘ- Cryotherapy

****Electrolysis (catholysis)***

** Procedure:*

- *Anesthesia:* Local (Surface + Infiltration).
- *Two Electrodes are used:*
  - (i) One electrode (needle) is introduced into the hair follicle.
  - (ii) The second electrode (a piece of flat metal) is placed onto the cheek
- *The current is switched:* 3 milliamperes for 30 sec.

** N.B.:* (i) The needle is a –ve electrode attracting Na from the tissue leading to $H_2O \rightarrow \uparrow H + OH$ and $Na + OH \rightarrow Na\,OH$.

(ii) The hair follicle is desroyed by denaturing its protein

**** Diathermy:***

(i) The hair follicle destroyed by coagulation of its protein by heat.

(ii) Obsolete: as it leads to fibrosis → distort the normal nearby lashes.

II) Trichiasis

Written i.e. (تح

Definition:

A condition in which more than 4 lashes are maldirected & rub against cornea and bulbar conj.

Etiology:

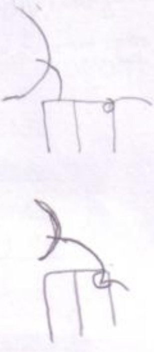
1- 2ry to Entropion.

2-Pure Trichiasis *may be.*

(i) Congenital: Distichiasis (rare).

Oral الشخص اللي اتعالج كتير
Chalazion → Distichiasis

In which there is an extra raw of lashes (in the position of openings of Meibomain gland which are found rudimentary or absent).



(ii) Acquired:

Due to fibrosis distorting the H. Follicles.

conj. ⇒
1. Trachoma (++++)
3. Membranous conjunctivitis

lid ⇒
2. Ulcerative Blepharitis.
4. Injuries and burns of the lid margin.

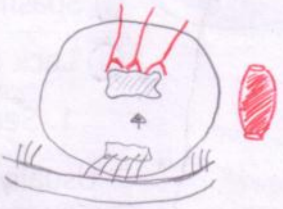
Clinical picture

Symptoms 1. F.B. Sensation 2. Lacrimation, photophobia.

Signs: 1. Maldirected lashes (> 4). 2. Conjunctival hyperemia.

Complications

1. Conjunctive:
1. Chronic conjunctivitis (Mechanical irritation) = hyperemia + Discharge
2. Conj. Ulceration.



2. Cornea
1. Ulceration.
2. Vascularisation & Opacification.

+ Epidermalization of cornea and conjunctiva.

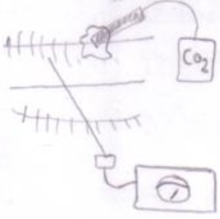
> *N.B.:* Epidermalization (Epidermoid changes): is deposition of keratin on the epithelium of cornea & conjunctiva.

Oral: Why cornea isn't Keratinized? → for transparency (no, not the only cause) but it doesn't need because it is Protected by other reflexes

Treatment:

2ry to entropion → ttt of Entropion.

Pure trichiasis:



(i) Congenital: Destroy the extra raw by:

i- Electrolysis. Ii- Cryotherapy (-60° for 30 seconds)

(ii) Acquired:

Upper lid → Van Millengen's operation.

Lower lid → Webster's operation.

III- Entropion

Definition

It is rolling in of the lid margin.

Etiology

Most common in Egypt

1-Cicatricial: due to fibrosis of palpebral conjunctiva as in:

most common - Trachoma (+++) (so, usually affect upper lid).

Fatal type - Membranous conjunctivitis , Cicatricial pemphegoid. (autoimmune disorder)

- Burns & caustics.

2-Spastic:

2 Factors are essential for its occurrence.

(i) Spasm of ms. of Riolan (due to corneal (projecting suture) or conjunctival irritation).

(ii) Lack of support of lid by the globe as in:

1. Senile enophthalmos. (due to absorption of fat → gives upper hand to E.O.M → Pulls eye inward) 2. Atrophic or enucleated eyes.

* Usually affect lower lid (small tarsus easily rolled).

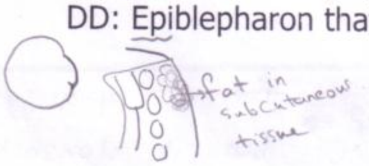
3-Congenital: - Usually associated with

(i) Microphthalmos (shrunken eye) (ii) Anophthalmos. (Absent eye)

- usually affecting the lower lid.

DD: Epiblepharon (above) that: - Affect the medial aspect

- Absent LL crease.

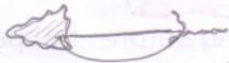


Most common in the world

Senile

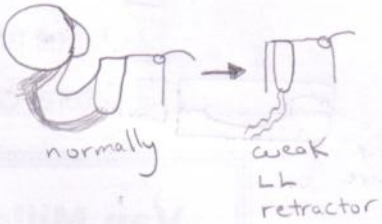
4. Involutional : due to

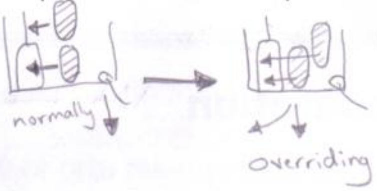
1- Horizontal laxity :weak palp. Ligaments



2- Vertical laxity : weak LL retractor.

3- Overriding of preseptal portion over the pretarsal portion.





Clinical picture

Symptoms: as in trichiasis.

Signs: an in trichiasis + rolling of lid margin.

Complications

as in trichiasis.

Oral: What are complications of entropion with madarosis?

→ No problem as complications are related to lashes only.

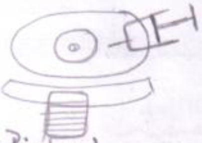
Treatment:

A- Spastic:

(i) Remove any cause of irritation. (يوم corneal suture or أسبوع acute conjuctivitis or شهور chronic conjuctivitis)

(ii) Put an artificial eye in cases of enucleation.

* In mild cases: add temporary measures:



لو محتاج يوم a) Application of T-Shaped adhsive plaster.

لو محتاج أسبوع b) Lateral Canthotomy. (to releive tension in muscle of Riolan.)

(Incision at the lat. Canthus to interrupt the fibers of m. of Riolan).

* In moderate to server cases add permanent measures:

(forever) better cosmetically from canthoplasty

1. Skin & ms operation: Excision of an ellipse of:

Skin: to stretch it.

Orbicularis ms: to excise the ms of Riolan.

(forever) but cosmetically very bad

2. Lateral canthoplasty:

(Ms of Riolan is cut permanently by preventing the edges from healing by covering it by mucous membrane (form conjunctiva). → to prevent exposure of raw areas (epithelialized surfaces) upper lip with lower lip [illegible]

B- Cicatricial:

(mild cases) 1. Anterior lamellar reposition

[illegible]

(moderate cases) 2-Transverse tarsotomy with marginal rotation.

(→ No removal of tarsus → No shortening of lid → No lagophthalmus)

3- Or (i) Upper lid → Snellen's operation

(ii) Lower lid → Webster's operation.

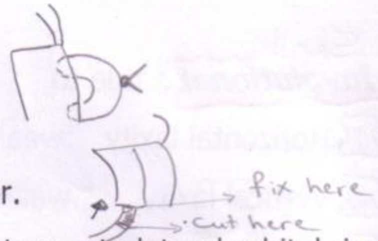
3-Involutional:

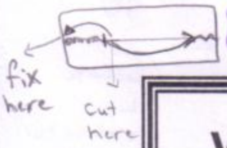
لحد ما الراجل يضبط
السكر والضغط وبعدين
أعمل له كمية من اللي تحت

1-Everting suture: temporary ttt in mild cases.

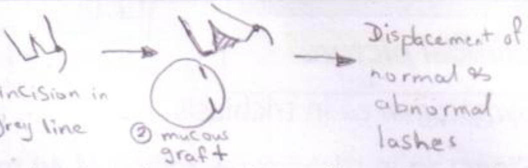
2- Jones procedure: tucking of lower lid retractor.

3-Lateral canthal sling: fixation of lateral part of tarsus to lateral orbital rim.





Van Millengen's operation



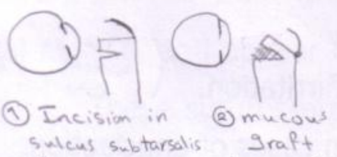
Principle:

The lashes (normal & mal – directed) are displaced away from the cornea by putting a mucous graft (from the lip) in an incision in the gray line.

Indications: - Pure trichiasis of upper lid.

Contra-indications: Trichiasis of the lower lid (consmetically bad).

Webster's Operation



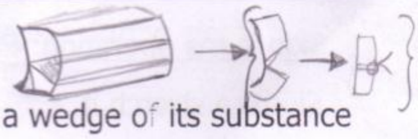
Principle:

The lashes are displaced away form cornea by putting a mucous graft in incision sulcus subtarsalis (this also straighten the tarsus & lengthen the palpebral conj.).

Indications:

1. Cicatricial entropion of lower lid 2. Trichiasis of lower lid.

Snellen's Operation



Principle: to straighten the tarsus by removing a wedge of its substance

Indication: cicatricial entropion of the upper lid.

Contra-indication:

1- Entropion of lower lid: as tarsus is small (do Webster).

2-Recurrent cases: as the tarsus becomes small.

3- Pure trichiasis: as the tarsus is straight (do Van Millengen).

100% accompanied by epiphora.

Ectropion

Definition:

It is rolling out of the lid margin.

Etiology

Most Common **1. Senile**: due to : a- Laxity of orb. ms & palpebral ligament.

b- Redundant skin.

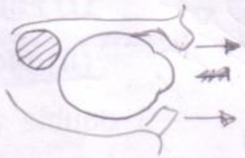
2- Mechanical: due to increase weight of lower lid by chalazion-tumor.

الأسوأ **3- Paralytic**: due to paralysis of orbicularis ms (7th n, palsy).+

4- Spastic: due to (i) Spasm of ms of Riolan.

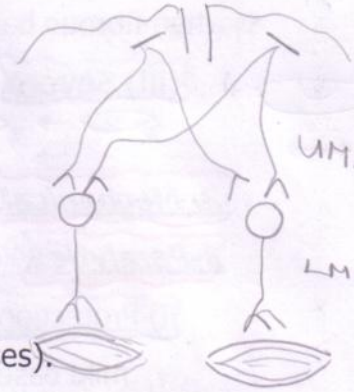
(ii) Well support of lid by the globe as in:

↑fat ← children – exopthalmos.



5- Cicatricial: due to scaring of lid skin as in burns – operation.

Least Common **6- Congenital**: rare (Bilateral & associated with other anomalies)



Clinical picture

Symptoms:

(i) Epiphora.

(ii) Burning sensation: due to exposure (in paralytic cases).

(iii) ↓ of vision (corenal ulceration). by lagophthalmus.

Signs:

Ectropion may be

i- Mild: The punctum is visible.

ii- Moderate: The tarsal (palpebral) conj. Is exposed & hyperemic.

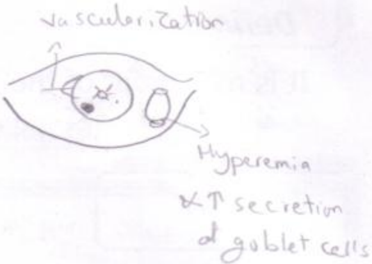
iii- Severe: 1. The palpebral conjunctiva is exposed & thickened. ↓ (by epithelization)

2. The cornea may ulcerate.

Complication:

(i) Conjunctival exposure: leads to:

No distribution of tears ← 1. Xerosis. 2. Chronic conjunctivitis.



(ii) Corneal exposure: leads to:

1. Xerosis. 2. Ulceration (in lower 1/3).

(iii) Lid: epiphora → vicious circle.

Treatment

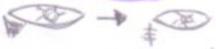
1- Senile:

(i) Mild: do cautery Puncture: in lower fornix to induce fibrosis.

(ii) Moderate → do Senllen's suture:

3 double armed silk sutures are passed from lower fornix, then through periosteum of he lower orbital margin, and appear on cheek where they are tied over 3 pieces of rubber. These sutures are removed after 2 weeks when fibrous bands are formed to maintain the lid in a normal position.

(iii) Severe a- Lateral canthal sling (fascia lata or silicone sling)



b- Horizontal lid shortening & blepharoplasty

2- Mechanical: ttt of the cause.

3-Paralytic : ttt of the cause +

i) Protection Of cornea : by

mild cases: drops during the day & ointment during sleep.

Severe cases: lateral tarsorraphy

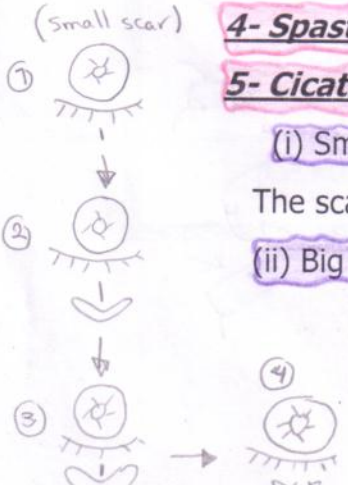
ii) Help nerve regeneration: by

Vitamin B complex, vasodilator, cortisone, NSAI, massage.

iii - Help muscle :
→ Massage
→ Electrical stimulation

4- Spastic: ttt of the cause.

(small scar)



5- Cicatricial:

(i) Small scar: do (V – Y Operation)

The scar is removed through v-shaped incision & the skin is sutured as Y.

(ii) Big scar: (Skin Grafting): The scar is excised

& the graft (from post-auricular area) is sutured in place.

↓

Oral: Why?
→ non-hairy
→ colour matching.

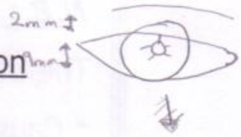
Congenital	Acquired
More	Less
Since birth	Any
Bilateral	Unilateral
	NO

Ptosis

Definition

It is drooping of the upper lid.

Normally U.L covers the upper 1/6 of cornea in the 1 ry position



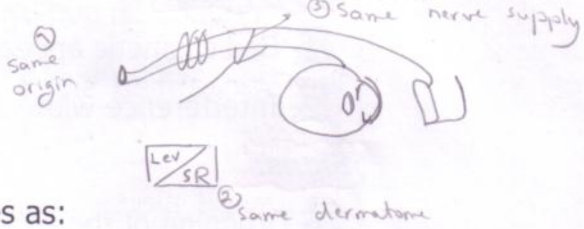
Etiology:

(I) Congenital: More common.

*** Cause:** Faculty development of the levator ms or its nerve supply.

(levator ms dystrophy leading to poor contraction & incomplete relaxation)

*** Characters:**



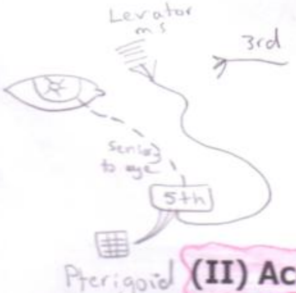
i- Dated since birth.

ii- Usually Bilateral.

iii- Usually associated with other anomalies as:

1- Weak superior rectus ms: as the SR & levator: being Developed from the same dermatome.

2- Other congenital anomalies e.g, epicanthus.



3- Marcus Grunn phenomenon (Jaw – Winking). Jaw - wink phenomenon)

The ptosed lid elevates on moving the jaw.

Cause: Faulty enervation. So that motor fibers from 5th nerve reach the levator ms instead of 3 rd nerve (misdirection).

(II) Acquired: Less common.

*** Characters:** i- Any age. ii- Usually unilateral.

*** Causes:**

1. Neurogenic: as in: a. 3rd n. palsy. b. Horner's syndrome.

2- Myogenic: as in: Myasthenia gravis. or Myotonic Dystrophica → Periodic Ptosis

3-Aponeorotic Ptosis

A) Senile (involutional) : due to laxity of levator ms (degenerative changes with age)

B) *Postoperative*: after cataract or retinal detachment surgery by injury to aponeurosis

4-Traumatic: Due to trauma of levator ms – its n. supply.

5- Mechanical: due to ↑ wt of lid by tumor or multiple chalazia.

6- Hysterical. → in females → Commonly bilateral → Commonly severe with no compensatory head movement.

N.B.: Pseudoptosis

The U.L. is abnormally low although L.P.S & Muller's ms are normal.

* Causes: Enophthalmos, atrophic eye (lack of support) → in ipsilateral side

Exophthalmus → contralateral side

Clinical picture:

Symptoms:

1- Bad cosmetic appearance.

2- Interference with vision (if the pupil is covered).

Signs:

1- Drooping of the upper eye lid.

2- Lid crease: is absent.

* **Severe cases**: shows: The following compensatory changes.

1. The frontalis ms contracts to elevate lid. Leading to: → But no compensation as skin is loosely adherent So, stretched but without elevating lids.

- Corrugation of forehead.
- Arching of eye brow.

2. Head is thrown backward in bilateral cases & the Head is tilted in unilateral cases.
3. The eye roles down: to see as much as possible.

Complication: (especially in unilateral cases)

Due to head tilt → 1- Ocular Torticollis: رقبة لفة due to contracture of sternomastoid ms. → by -- blood supply ↓ fibrosis

2- Amblyopia & Squint: From occlusion & disuse.

3 - Skeletal deformities

A Lordosis in bilateral cases

B Scoliosis in unilateral cases

Important Clinical Points

1. Determine the amount of ptosis: Measure the distance from the center of the upper lid margin to the lower limbus.

- Normally: 9 mm.

* Ptosis: may be
(i) Mild: drooping 1-2 mm
(ii) Moderate: dropping 3 mm.
(iii) Severe: dropping $\geq$ 4 mm.

2. Determine the levator function (power) Oral: very imp.

- **Correct** : the head position, then
- **Ask** : The patient to look down, then. (to relax frontalis)
- **Fix** : The brow~~n~~ against superior orbital margin. (to prevent elevation. By the frontalis ms.) then.
- **Ask** : The patient to look up, then.
- **Measure** : The elevation of the lid margin (in mm).

3- Test for ocular motility. 4- Test for corneal sensation.

5- Test for Marcus Gunn phenomenon.

Treatment:

(I) Acquired: ttt of the cause

1- **Mechanical**: remove the cause (tumor or multiple chalazia).

أحوّله لدكتور psychatery

2-**Hysterical**: psycho-analysis.

أحوّله لدكتور neurology

3-**Myasthenia Gravis**: prostigmine.

4-**Paralytic or traumatic causes**: Wait for 6 months to give time for:
i. Edema and hge to subside. ii. Nerve to regenerate,
(then re-evaluate the ptosis).

5. **Senile**: levator aponeurosis repair or lev. Resection

(II) Congenital:

a) Age of interference:

أخاف لا ترتخي → lead to lagophthalmus

(i) Mild to moderate: Wait till the school age (5-6 ys) as some spontaneous improvement of ptosis may occur (To allow for full ms development)

(ii) Severe: Unilat: at the age of 2 ys (for fear of amblyopia)

Bilat: at younger age (even at 6 months)

b) Choice of operation:

depends on (i) Amount of ptosis. (ii) Levator action

1- Levator Tucking:

Indication : mild ptosis with good levator function

Idea: part of the levator is excised together with the upper border of tarsus through the conjunctiva (due to cosmetic appearance)

2- Levator resection:

Indication: moderate ptosis with good to fair levator function

Principle: resection and and advancement of the levator ms to strengthen the ms.either:

Blascovic's op. (from conj. Side) Or Everbauch's (from skin side).

near but field ضيق

away but field واسع

Contra – indications:

Complete levator paralysis: no effect (do Hess op).

Complete 3rd n. palsy: because this pt. has paralytic squint without diplopia (as the ptosed lid covers the squinting eye) so, if ptosis is corrected before the squint, diplopia will occur (so, correct the squint 1st).

Corneal anesthesia: as the ptosis protects the cornea till sensation recovers.

(5th nerve) Palsy

Marcus – Gunn phenomena: the op. Will worsen the cosmetic appearance without correcting the ptosis. Do: bilat lev. Tenotomy + Hess op.

Remove the muscle & tt as it is paralysed

3-Frontalis suspension (brow suspension)=Hess op.

Indication: Severe ptosis with poor levator function

Idea :the upper lid is suspended to the frontalis ms using

Endogenous material (fascia lata) or exogenous material as prolene suture.

to prevent fibrosis

(sutures are passed under the skin from the lid (above the lid margin) to fronatlis ms and tied (above the brow) → Result: Corrugation of frontalis DS brows elevated but lid elevated with them.

Lagophthalmos

Definition: It is inability to close the palpebral fisure completely.

Etiology:

1- Local causes:

(i) Lids: (a) Paralysis of orbicularis (as in Bell's palsy)

(b) Severe ectropion (esp. cicatricial)

(c) Coloboma of the lid.

(d) Postoperative: over correction in: - Ptosis surgery.

(ii) Globe: as in proptosis – staphyloma

2- General cause:

Severe illness (typhoid, cholera) or coma due to ms atony

Clinical picture:

Symptoms:

1-Epiphora. 2-Burring sensation (due to exposure).

3-↓ of vision. 4-Disfigurement.

Signs:

1- Inability to close the P.F when the lids are shut.

2-Picture of the cause.

3- Picture of complication.

Complications:

(i) Conj.:

1. Xerosis. 2. Chronic conjunctivitis

(ii) Cornea:

1-Xerosis. 2- Keratitis with Lagophthalmos (in the lower 1/3 of cornea)

Treatment:

1- ttt of the cause. e.g,

(i) Grafting in: - Coloboma. - Cicatricial ectropion.

(ii) ttt of Bell's palsy.

2- Protection of the cornea by:

a- Mild cases:

(i) Ointment at night.

(ii) Methyl cellulose drop 0.5% during day.

b- Severe cases:

(i) Lateral Tarsorraphy.

(ii) Fascia lata sling & Slicone sling:

Where a sling is passed between the medial & lateral palpebral ligaments to support the lower lid in its normal position.

Tarsorraphy

It is an operation in which we make adhesions between the lid margins.

* Types: 1. Lateral 2. Median.

Dermatochalasis

Redundancy of upper lid skin in old age associated with bulging of the orbital fat.

Blepharochalasis

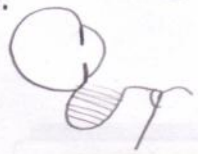
Recurrent attacks of upper lid edema ,leading to Redundancy of upper lid skin in young age

Symblepharon

Written very imp.

Definition:

It means adhesion Between lid – globe.



Etiology:

أهم شرط

It is due to presence of 2 raw surfaces opposite each other

1. Palpebral conj ↔ 2. Bullbar conj & cornea.

Causes of ① Cicatricial ectropion ② acquired trichiasis ← e.g, in ① 1. Burns and caustics. ② 2. Post. Operative (pterygium op). ③ 3- Trachoma. ④ 4- Diphtheria.

Types:

Oral → How to differentiate? By muscle hook.

1- *Anterior:* lid margin is adherent to bulbar conj. cornea.

→ A muscle hook Can pass under it

2- *Posterior:* Fornix is obliterated.

3- *Total:* lid is completely adherent to the globe.

Clinical picture (3 Ds)

1- *Diplopia:* Restriction of ocular movement (by fibrosis) → عين بتتحرك عادي والتانية تقيلة علشان ال fibrosis فيشوفوا صورتين مختلفتين.

حاجات ملهاش دعوة بال symblepharon

2- *Disfigurement.* → due to skin ulcers

3- *Diminution of vision* due to associated corn. Opacity. → due to corneal ulcers

Complication

a) Exposure Keratopathy

b) Chronic conjunctivitis

c) Ankyloblepharon

Treatment:

(a) Prophylactic ttt: till the raw surfaces re-epithelialize.

[illegible] ① 1- Pass a glass rod (coated with antibiotic ointment) several times/day to cut the adhesion. (it needs hospitalization)

② 2- Cortisone ointment. to suppress the fibroblastic activity (not, if corneal ulcer exists). → خطر ممكن تعمل Perforation.

→ ointment

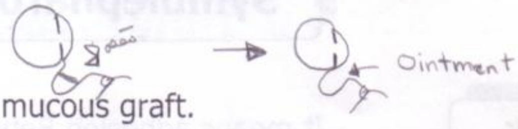
③ 3- Use contact shell.

→ contact shell

(b) Curative ttt:

ⓘ Separate the adhesion.

(ii) Cover the raw surface by mucous graft.



Madarosis

Definition

It is permanent "Loss of lashes due to desturction of Hair follicles".

Etiology

(i) General : Alopecia areata, leprosy, vitamin A deficiency.

[illegible]

(ii) Local : ① Inflammations: Ulcerative Blepharitis, styes.

② Trauma: - Surgical (diathermy, electrolysis).

- Burn & chemical injuries.
- Irradiation : x-ray.

③ Congenital: with coloboma. → lid: مفيش = أصلا

Treatment: ttt of the cause + Artificial lashes.

عشان أحافظ على الـ lashes

Xanthelasma:

Oral

-Yellowish skin nodules in the medial canthal region

-Cause: subcutaneous deposition of cholesterol

-Seen in patients with DM & hypercholesterolemia

Congenital Anomalies

①- Epicanthus ②- Cong. Ptosis. ③- Distichiasis , Entropion , Ectropion.

④- Coloboma. ⑤-Blepharophimosis. (Narrow palpebral Fissure.)

Lid Edema

①- Traumatic : due to injuries or insect bit

②- Inflammatory : due to inflammation of lid ,conj.,cornea and iris.

③- Allergic(angioneurotic) : due to local medication e.g. atropine or

④- Passive : due to renal or cardiac diseases or thyrotoxicosis.

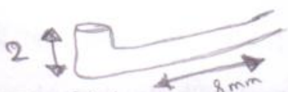
(II) The lacrimal drainage system (Written P10)

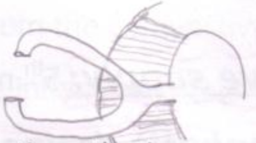
A) Gross anatomy:

1) 2 Puncti:

- Preset on lid margin near its posterior border.
- At a distance of 6 mm lateral to medial canthus on 2 elevations called lacrimal papillae.
- Not visible, except if lids are pulled away from eye or in ectropion.

2) 2 Canaliculi:



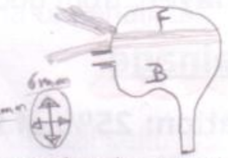


- These are fine tubes which carry tears from the puncti. to the Lac. sca.
- Each canaliculus is formed of 2 portions.

  (a) Vertical : 2 mm. (b) Horizontal : 8 mm
- The 2 canaliculi open into the lacrimal sac by a common canaliculus.

which opens at the junction of the upper 1/3 & lower 2/3 of lacrimal sac

3) Lacrimal sac:



- **Site:** in lac. fossa (in medial orbital wall).
- **Size:** when distended its 6 x 12 mm.
- **Parts:** (i) Fundus: Upper part (extends above med palp. Ligament).

  (ii) Body: Main part.

  (iii) Neck: narrow & continuous with NLD.
- It is enclosed in the lacrimal fascia.

4) Naso lacrimal duct (NLD): Longer & wider in males

a. It is 12-16 mm tube which carry tears from lac. sac to the nose.

b. It open in inferior meatus.

c. Direction: downward: backward & laterally.

d. Its opening in the nose is guarded by a valve (Hasner's valve)

The Lacrimal Apparatus

Anatomy

Written

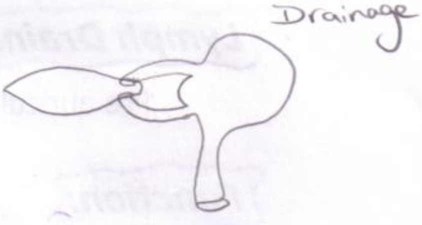
The lacrimal apparatus consists of

1. Lacrimal secretory system:

(i) Lacrimal gland (Main and Accessory) .

(ii) Goblet cells.

2. Drainage system



(i) 2 puncti. (ii) 2 canaliculi.

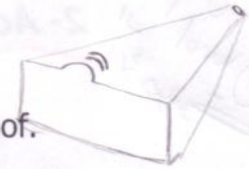
(iii) Lacrimal sca. (iv) Naso – lacrimal duct.

(I) The lacrimal secertory system.:

1- The main lacrimal gland:

A) Gross anatomy:

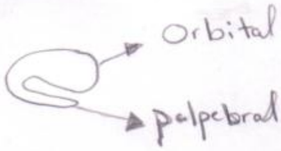
* **Site:** in a shallow bony fossa in the antero-lateral part of the orbital roof.



* **Shape:** Almond shaped.

* Parts: 1- Orbital portion: Superior & larger.

2- Palpebral portion: Inferior & smaller. (rests on sup. Formix & can be seen if the upper lid is everted).



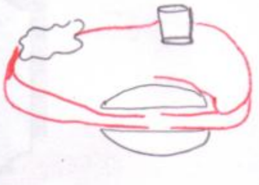
* **Ducts:** to 10-12 ducts arise from orbital portion & pas through palperal portion to open in the lateral part of the upper Fronix. (so. Removal of palp. Portion prevents secretion of whole gland).

B) Microscopic Anatomy:

The gland is formed of acini which are lined by 2 layers of cells:

1. Outer flat myo-epithelial cells (contractile).
2. Inner Columnar (secretory).

Blood supply:



Lacrimal artery (branch from the ophthalmic artery).

Nerve supply:

Sensory: Lacrimal nerve (branch from ophthalmic. n).

Parasympathetic: Secretory.

Sympathetic: (Vasomotor): from the superior cervical ganglion.

Lymph Drainage:

Pre auricular lymph nodes.

Function:

Responsible for reflex secretion.

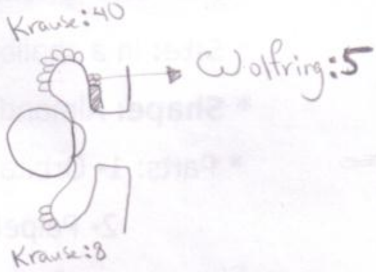
Reflex secretion → Main gland → Stimulus is required

Basic secretion → Accessory glands → Stimulus is not required

أهم من الـ gland الأصلي

2- Accessory lacrimal glands:

These are microscopic glands:



(i) Glands of Krause:

- **Site:** Upper & Lower fornices.
- **Number:** 40 (Upper Fornix) & 8 (Lower F).

(ii) Glands of Wolfring:

- **Site:** Upper border of upper tarsus.
- **Number :** 5

*** Function:** Responsible for Basic secretion.

N.B. (1) Destruction or removal of the main lac. gland doesn't lead to xerosis as we can depend on the secretion of goblet cells & accessory lac. glands.

(2) Amount of tear secreted per day is about : 1-1.5 ml.

(3) pH of tears is slightly alkaline.

B) Microscopic anatomy:

- Puncti & Canaliculi: are lined by St. Squamous epith.
- Sac & NLD: are lined by 2 layers of columnar epith with goblet cells. (NLD is surrounded by C.T rich in veins. Congestion of this plexus lead to NLDO.

Blood supply:

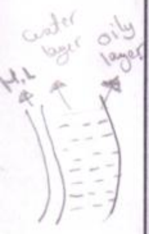
Arteries: Infraorbital, Angular & Palpebral arteries.

Veins: Infraorbital, Angular & Nasal veins.

Nerve supply: 5th n.

Lymphatic drainage: to submandibular lymph nodes.

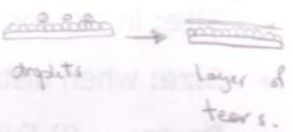
N.B.



The pre-corneal tear film is made of 3 layers

لازم يكتب مع
السؤال السابق

1. **Oily layer**: from Meibomian gland (see lid).
2. **Watery layer**. From lac. gland (lubrication, nutrition, protection & optical).
3. **Mucin layer**: from goblet cells (change corn. Epith. From Hydrophobic--Philic)



Tear Drainage

Evaporation: 25% of tear

Excretion: a- Passive: by gravity & capillarity

b-Active : by the lacrimal pump (the Horner ms.)

Diseases of Lacrimal Passages

Watering of the Eye

It means over flow of tears over the cheek due to either:

1. Increased secretion (Lacrimation).
2. Or decreased drainage (epiphora).

(A) Lacrimation

Causes:

حس تبع الهم **(i) Emotional**

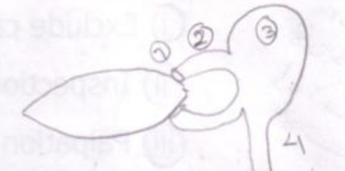
e.g, Excitement

تبع الهم **(ii) Reflex**

due to Corneal ulcer, iritis , F.B

(II) Epiphora

Causes:



A) Failure of the lacrimal Pump:

- Ectropion
- Irregular posterior border
- Orbicularis paralysis (pump) failure).

اهم
Oral

B) Obstruction Of lacrimal Passages

i) Punctum: Stenosis or obstruction either:

a. Congenital. b. Acquired e.g, Infection as in Trachoma.

ii) Canaliculus: Stenosis or obstruction either:

a. Congenital. b. Acquired e.g,: Infection (Fungal or bacterial)

Fungal canaliculitis: Caused by actinomyces (streptothrix)

The punctum is red & prominent with pressure a muco-purulent discharge with black concretions or sulpher granules may be expressed Gritty sensation on probing

iii) Lacrimal Sac.:

a. Adhesion from repeated inflammation.

b. Tumors of the Lac. sac.

c. Fracture of lacrimal bones. (Trauma)

Most common

vi) Naso-lacrimal duct:

a. Congenital: Imperforate Hasner's valve.

b- Acquired:

In the NLD: - Congesion - Fungus(streptothrix)

In NL canal: + as the sac (fracture , periostitis, tumors)

v) Nose: - Rhinoscleroma - Hypertrophy of inf. turbinate

- Polyps or tumors. - Deviated septum

المشكلة
الأخطر هي
في
lacrimation
not
Epiphora
لأن ده معناه
إن المشكلة في
العين

Investigations

1.Ocular Examination

(i) Exclude causes of lacrimation

(ii) Inspection of lid margin (for ectropion, irregularities, punctal obst.).

(iii) Palpation: of the sac (for mass and tenderness)

2. Diagnostic Tests

i) Fluorescein tests:

- Put a drop of fluorescein in the conj. sac & after 2 minutes.
- Ask patient to blow his nose in a white hand kerchief Or better a cotton pellet (soaked in xylocaine spray) under the inferior turbinate .
- If: - Green color is seen : patent passages.
  - No Green color is seen obstruction (but the level is not determined).

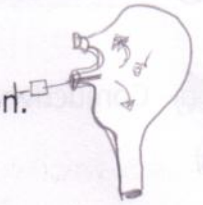
ii) Regurge test:

- Ask patient to look up (to evert puntum).
- Press by a little finger on the lac. Sac below the medial palp. Ligament:

  Backward, medially & upward.
- If -ve reg. = Upper segment obstruction. + ve reg. = NLD obstruction.

iii) Diagnostic syringing:

- Dilatation of lower canaliculus, then syringing with saline is done.
- If - Regurge from upper punctum = NLD obstruction.
  - Regurge from same punctum = canalicular obstruction.



iv) Jones dye test:

* **Test I** : Fluorescein test: is done → if no green color.

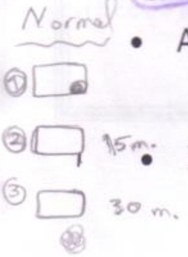
* **Test II** : The lacrimal passage are irrigated with saline.

* **IF : - Fl. Is recovered** → partial obstruction or pump failure.

- **no saline reach nose** → complete obstruction.

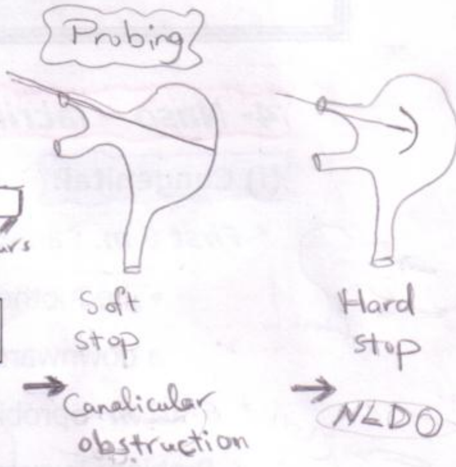
3- Radiological Examination

i) Dacryocystography:



- A Radio-opaque dye (lipidol) is injected in the canaliculus and repeated X-rays are taken.
- If: - Level of the dye is seen = obstruction.
  - Rat tail appearance = Stenosis.
  - Delayed emptying = failure of lacrimal pump

  - Filling defects: Tumors or canaliculi



Normal emptying: Sac. : 15 min. Duct: in 30 min

ii) X-ray on the nose & sinuses:

[illegible] Dacryocintillography

4. E.N.T. examination.

Treatment:

1- Lid & nose causes: ttt of the cause.

2- Punctum and canaliculi

i) Stenosis: a- Dilatation & probing

b- One snip ampullotomy: vertical snip is made in the posterior wall of the canal.

c- Laser punctoplasty

ii) Obstruction :

a- 3 snip operation: a triangle is removed from posterior wall of the canaliculus.

b- Conjuctivo- DCR: the conjunctiva is connected to the nose by a glass tube to overcome the obstruction

Probing

1. ***Anesthesia:*** General (young), local (adult).
2. ***Dilate the punctum by lacrimal dilator.***
3. ***Introduce the probe in the anatomical direction of lacrimal passages.***

First: Vertically (2 mm) then horizontally until it hits the bone (of lacrimal fossa).

Then: Withdraw slightly & direct it down & slightly lateral & backward.

4- Naso – lacrimal duct obstruction: (NLDO)

(i) Congenital:

* ***First 6 m.*** : antibiotic drops + massage (toward nose).

•The mother is instructed to press on the lacrimal sac in a downward direction (may help to open Hassner valve).

اسي شوية يمكن valve open

stagnation لكن ≠ induce infection

* ***6-12 m*** : probing + Irrigation (syringing). → force ↑↑ than massage

النجاح نسبته عالية
لأن الغشاء
تقطيعه سهل

i- Probing: is successful if done carefully as the lacrimal passages are still elastic and can be stretched by the probe

horizontally

ii- Irrigation: repeated syringing with saline may cure condition

iii- DCR : if repeated probing failed

(ii) Acquired:

1. ttt of the cause. 2. Probing. 3.DCR.

↓
النجاح صعب لأن
الأنسجة fibrosis =
تقطيعها صعب

Inflammation of the lacrimal Sac

Acute Dacryocystitis

= (Lacrimal sac abscess)

Definition: It is acute suppurative inflammation of the sac.

Oral

Etiology: Organism: usually Staph. Aureus (from the conjunctiva).

Either: Do novo or on top of chronic inflammation.

Clinical picture:

Symptoms: 1. General: fever, Headache.

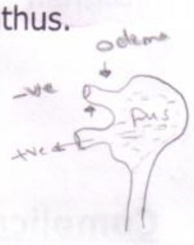
2. Local: (i) Painful swelling & at the site of the sac.

(ii) Epiphora.

(any abscess)

Signs: 1. Swelling: red, Hot & tender below the medial canthus.

2. Regurege test: +ve with excessive reflux of pus sometimes, -ve (due to edema of canaliculi).



Oral

Complications:

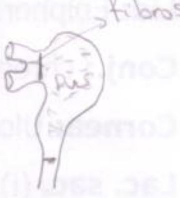
①. Lacrimal Fistula.

②. Orbital cellulitis.

③.Cavernous Sinus thrombosis.

④- Pyocele

(كيس مملوء بالصديد)



⑤- Chronic dacryocystitis.

Treatment:

•1- During the acute phase

A) Antibiotic
B) Hot fomentation
C) Lotion
D) Incision to drain pus.

•2- After the attack :

A) DCR
B) Dacryocystectomy
With Fistulectomy (if present)

Chronic Dacryocystitis

Oral

Definition:

It is chronic inflammation of the lac. sac.

Etiology:

(i) Stasis of tears in the sac, due to NLD obst. (cong, or acq). +

(ii) Infection: Pneumoccoci (80% from nose, sinuses).

(staff, strept.,trachoma, fungus, TB ,$: less common)

N.B. Chronic dacryocystitis is more in menopausal females.

This is because: 1. NLD is anatomically narrower.

2. Endocrinal disturbances at menopause leading to thickening of the lining mucosa.

& replacement therapy by estrogen ↓ VD of venous plexus

Clinical picture:

Symptoms: 1. Fullness منتفخة 2. Epiphora

Signs:

1. Swelling (below the med. Canthus).
2. Regurege test: +ve

(First watery "tears" Then mucopurulent, lastly purulent). → As → no pain → no odema لأن بقالها مدة طويلة

Oral

Complications:

1. **Lid:** Epiphora → vicious circle.
2. **Conj.:** chronic conjunctivitis.
3. **Cornea:** Ulcer (Hypopyon).
4. **Lac. sac.** (i) Acute dacryocystitis. (chronic → Acute غريبة

   (ii) Obstruction of canaliculi → Mucocele.

Mucocele: is a distended sac with mucous from lining goblet cells.

5. **Endophthalmitis:** If not treated before intra-ocular operations.

•Investigation:

as in epiphora

•Treatment

1- restore communication between sac & nose.

as the obstruction prevent subsidence of the inflammation.

(ttt of NLDO)

2- ttt of infection(antibiotic:systemic& local).

3- TTT of cause: congestion (Vasoconstrictor drops), nasal polypi.

Operations

Dacryocystorhinostomy (DCR)

Principle: is to make anastomosis between the sac & middle meatus of the nose.

hard to do it through inferior meatus due to bone

Indications:

1. Chronic dacryocystitis with relatively halthy sac & nose.
2. NLD obstruction (conj or acq.) if probing is failed.
3. Mucocele.

- ***Contra-indications:***

1. Bad condition of the sac (adhesions) & the nose (atrophic rhinitis).
2. Hyopyon ulcer.
3. T.B. or Tumors of the sac.

الفتحة

هنعمل فتحة قطرها ١٢ م وبعد فترة
هانشوفها بالمنظار لاقيتها ٥ م
ودي كفاية لل drainage بس المشكلة
إن الـ level بتاع الفتحة بقى أعلى ولذلك
هيحصل stagnation تحتها ولذلك هيفضل المريض
ياخد (Antibiotics) طول حياته

Lacrimal intubation

Aim: is permanent fistula between lac. passages & the nose.

By: Silicone tube (removed after 3 -6 months)

مادة خاملة (inert)

Dacryocystectomy:

Principle: The sac is excised.

Indications: Are contra-indications of DCR.

II- Minute Anatomy:

The conj. consists of "2" layers.

* *Epithelium:*

- From the lid margin to the S. subtarsalis : Stratified sq.
- From the Sulcus subtarsalis to the fornix : 2 layers.
- From the fornix to the limbus : cells increase in number to become st. sq. (to continue with corneal epith).

N.B.: The epithelium contains Goblet cells which secrete mucin.

* *Substantia propria:*

- 2 Layers:

(i) Adenoid layer: loose C.T. (containing lymphocytes).

- No true lymphoid Follicles.
- It develops 3 months after birth.

(ii) Fibrous layer: Deeper (containing the main bl V & neves).

III- Blood supply:

*** Arteris:**

(i) Anterior Conjunctival arteries:

- Branchs from ant. Ciliary arteries.
- Supply ant. Part of bulbar conj. (4 mm around limbus).

(ii) Posterior Conjunctival arteries:

- Branches from palpebral arteries.
- Supply. All the palpebral conj + the Fronix + the post. Part of bulbar conj.

*** Veins:**

Accompany the arteries but more numerous.

Ant. Conj. veins: to the ant. Ciliary v. (Ophthalmic vein).

Post. Conj. veins: to the palpebral v. (Ophthalmic vein).

IV- Lymph Drainage: as the lid.

V- Nerve supply: As the lid except 3 mm around limbus supplied as cornea.

Conjunctiva

Anatomy

I- Gross Anatomy:

- It is thin semitransparent membrane which Lines the back of the lid.

- Then reflected at the fornix to cover the anterior part of the sclera.

It consist of 5 parts

1- Palpebral conj: (which line the back of lid).

- It shows → sulcus subtarsalis.

  It can be divided into:

  i) Marginal Part: from the gray line to the sulcus subtarsalis

  ii) Tarsal Part: very vascular & adherent to the tarsus.

2- Baulbar conj: (which cover the sclera)

* It is loosely adherent to sclera except for 3 mm around the limbus.

3- Fornix: site of reflection

* Number: 4 fornices (Superior, Inferior, Lateral & Medial).

* Superior fornix: - The Deepest

- Receives: 1. The levator insertion.

  2. Ducts of the main lacrimal gland (main).

4- Plica semilunaris:

* It is a cresentic fold of conj. (the at inner canthus).

* It correspondes to the 3rd lid in many animals.

5- Caruncle:

* It is vascular fleshy elevation (at the inner canthus).

* Considered as a part of the lid as it contains seb. Glands & fine hair

Conjunctivitis

Definition: It is inflammation of conj. characterized by hyperemia & discharge.

Classification:

(I) ***Infective conjunctivitis****:* * Acute: MPC, Purulent * Membranous.

* Chronic : - Non specific.

- Specific: trachoma - Angular

(II) ***Allergic conjunctivitis****:* may be due to

- Exogenous toxin (spring catarrh).
- Endogenous toxin (phlyctenular conj.).

Muco – purulent conjunctivitis

Definition: It is acute Infective conjunctivitis characterized by hyperemia & Mucopurulent discharge.

Etiology:

Predisposing factors: Bad hygiene – flies – dirty towels.

Organism: 1. Kock – Week's bacillus (Haemophyllus egypticus)

2. Staph., Strept, Pneumococci.

	Koch – Week's	**Pneumococci**
Incidence	Commonest in Egypt	Rare in Egypt
Season	Summer (flies)	Winter
Pseudo-membrane & iritis	Absent	Present
Sensitive to	Sulfa, not penicillin	Sulfa & penicillin

Clinical picture:

Symptoms

1. Discomfort, red eye, discharge.
2. F.B. sensation (due to dry discharge under the lid).
3. Colored Haloes around light (due to diffraction of light from discharge crossing the pupil).

Sings:

(i) Local 1-Conjunctiva:

a) Edema (chemosis). b)Injection.

2-Lid:

a)Edema. b) Lashes glued together by the discharge.

(ii) General: pre-auricular lymphadenophathy.

Complications:

1. **Chronic conjunctivitis:** If the condition is not well treated.
2. **Corneal ulcer (Marginal):** because chemosis will from a gutter between the conj. & the cornea → discharge will accumulate & toxicate corneal periphery → marginal, crescentic ulcer.
3. **Iritis:** Only in cases with Pneumococci.

Treatment:

A) Prophylactic ttt: avoid predisposing factors:

1. Using separate towels. 2. Iradication of flies.

B) Curative ttt:

1. General: systemic antibiotics.
2. Local:

a) Antiseptic lotions

- Value: To remove the discharge Mechanically.
- Examples: - Boric acid 4%. - $NaHCO_3$ 3% - Sterile water.
- Frequency: t.d.s

b) Antibiotic drops:

- Value: To kill the organism.
- Example: Sulfacetamide 10-30%. - Chloramphenicol (1%).
- Frequency: t.d.s.

c) Eye ointment:

* Value: 1) To prevent stickiness of lids during sleep allowing free exit for the discharge.
2) Long-acting antibiotic effect.

- Example: broad spectrum antibiotic ointment (e.g, teramycin).
- Frequency: at night.

d) Hot fomentation:

* Value: Produces vasodilatation which improve the circulation:

1. Bringing more antibodies & leukocytes.
2. Washing the toxins.

e) Dark Glasses: value to avoid photophobia.

N.B.: 1. Bandage is contraindicated: due to:

a. Retention of discharge (toxins)

b. Increase temperature of conj sac. Promoting growth of invading organism.

Purulent Conjunctivitis

Definition: Acute. Infective conjunctivitis characterized by:

- Hyperemia - Purulent discharge

- Corneal involvement - General Manifestation.

Etiology:

(I) 80% of cases: by Gonococci.

(II) 20% of cases: By staph, strept ….. etc

Types: of gonococcal conjunctivitis

1. Epidemic: infection is transmitted from one eye to another.
2. Genital: transmitted from infected genital discharge to eye.
   (i) By Contaminated Hands (autogenous infection).
   (ii) From maternal passages during labour (ophth. Neonatorum).

Incidence:

- ***Age :*** Common in children.
- ***Season:*** Epidemics occur in summer (July – august).

Clinical picture:

Incubation period: (3 hours – 3 days).

Stages:

1- Stage of infiltration:

(i) Lid : marked edema (closing the palpebral fissure).
(ii) Conj : marked chemosis, Hyperemia & subconj. hge.
(iii) Discharge : watery, mucoid.
(iii) Cornea : may show ulceration.
(iv) General : mild fever + preauricular lymphadenopahty.

2- Stage of discharge:

(i) Lid., conj. & general manifestations: decreased.
(ii) But with large amounts of purulent discharge.

3- Chronic stage:

(i) Occurs if the condition is not well treated.
(ii) Eye looks quite but discharge is full of gonococci.
(iii) The pt. becomes a carrier who initiates epidemics.

Complications:

1- Corneal ulceration:

Mechanism:

a) Chemosis

(i) Form a gutter at the limbus → …….. → Marginal ulcer.

(ii) Press on limbal capillaries → Central ulcer.

b) Gonococci: Can invade intact epithelium.

Types:

a) Marginal b) Ring c) Central

2- Iritis or Iridocyclytis.

Treatment

** Prophylactic ttt*

(i) Avoid infection of the other eye (antibiotic drops in both eyes).

(ii) Avoid infection of other persons (Health education-combat flies)

(iii Avoid infection of the doctor: by wearing of gloves .

** Curative ttt*

I) General: Systemic antibiotic.

II) Local: As is M.P.C but.

1- Eye lotion:

- Used more frequent (as the discharge accumulates rapidly).
- Not needed in the stage of infiltration.

2-Antibiotic drops:

- Used also more frequent. E.g, every 5 min for 1 hour, then every hour for 48 hours, then T.D.S.)

3-Eye ointment:

(i) Antibiotic ointment: as in MPC.

(ii) Atropine ointment: if corneal ulceration occurs.

Ophthalmia Neonatorum

Definition: Acute conjunctivitis occurring in newly born (in first 2 weeks).

Etiology:

A) Infectious: Organisms

* From the Birth canal

- Gonococci - Inclusion virus - HSV

*After Birth:

- Gonococci - Staph & Streptococci.

B) Chemical:

due to irritation by drugs (drops or ointment) used for prophylaxis against infection.

Clinical Picture:

i) Gonococcal infection. IP: 1-3 days, severe & Purulent

ii) Staph. & Strep: IP: 4-5 days, Purulent &may be severe

iii) Inclusion virus:

IP: 5-12 days, no follicles (Why?), may be pseudomembranous.

iv) HSV: may show punctate k. & may be pseudomemb.

v) Chemical: mild & in the 1st 24 hours

Lab.Diagnosis:

1- Conj. Smears

2- Immunofluorescent test for chlamydia.

3- Cultures for HSV.

D.D.: From congenital dacryocystitis (-ve regurege)

- Any discharge from the eye of a newborn Is suspicious since tears are not secreted at this early life.

Treatment:

1. Prophylactic ttt.

(i) Proper ttt. of mother before labour.

(ii) Wash the infant with the head up.

(iii) Crede's method: a drop of silver nitrate 1% is instilled in each eye after birth (Antibiotic drops are used instead).

2. Curative ttt.: as purulent conjunctivitis

Membranous Conjunctivitis

Definition: It is acute, infective conjunctivitis characterized by:

- Hyperemia
- Purulent discharge.
- Corneal involvement
- General manifestation (severe).
- Membrane formation.

Etiology: Infection by diphtheria bacillus.

Incidence:

- Rare in Egypt.
- Age: 2-5 years.
- Season: Common in winter.

Clinical picture:

Incubation period: few hours - few days.

Stages:

1. Stage of infiltration:

(i) Lid : Marked edema (closing the palpebral Fissure).

(ii) Conj. : Marked chemosis & Hyperemia. But nodischarge.

(iii) Cornea : May show ulceration.

(iv) General : Fever + enlarged tender L. nodes.

In this stage: The Palpebral Conjunctiva is covered by a firmly adherent grayish white membrane. Which when removed leaves a raw bleeding surface.

The membrane is formed of (necrotic epithelium – fibrin – bacilli).

Damage of epithelial surface by severe inflammation can cause exudation of fibrin,inflammatory cell& serous fluid that is together with the necrotic cells form a membrane firmly adherent to the surface.

2- Stage of discharge:

(a) Lid, Conj & General manifestations:

decrease.

(b) Discharge: A large amount of bloody purulent discharge

But in this stage -The membrane separates leaving a granulating surface.

3- Stage of fibrosis: Healing occurs by extensive fibrosis

D.D.:

	Membranous conj	Pseudo-membranous conj
Etiology	Diphtheria bacilli	Pneumococci, viruses. Fungus caustics, atropine sensitivity
Membrane	Necrotic epith + fibrin + bacilli	Coagulated discharge rich in fibrin
Adhesion	Adherent	Not
If removed	Leaves a raw surface	No raw surface

Complications:

(I) General:

(i) Toxic myocarditis. (ii) Toxic glomerulo-nephritis.

(iii) Toxic neuritis. (vi) Respiratory failure

(II) Local:

(i) Lid: trichiasis, entropion.

(ii) Conj: symblepharon, xerosis.

(iii) Cornea: Ulceration, pseudo pterygium.

(iv) Iris: iritis , Mydriasis

(v) 3,4,6 cranial nerves – paralytic squint.

(vi) 3rd n. involvement → loss of accommodation.

(vii) Op. nerve: op. neuritis& op. atrophy

Treatment:

*** Prophylactic ttt.***

(i) Immunization (D.P.T. vaccine).

(ii) Isolation of the patient & Notification of the health authorities.

*** Curative ttt.***

1- General ttt.

(i) 20.000-40.000 units of antitoxic serum is given IM & a conjunctival smear is taken, if the smear is +ve a similar does of antitoxic serum is given.

(ii) Penicillin: 1 million units / 24 h / I.V.

(iii) Viamins & tonics.

2- Local ttt.

(i) Antitoxic serum drops.

(ii) Penicillin drops (as in purulent. Conjunctivitis).

(iii) Atropien ointment.

(v) Prophylaxis against symblepharon (glass rod …).

- Causes: of membranous conjunctivitis

1. Bacteria: -Diphtheria-Gonococci- B-hemolytic streptococci
2. Virus: Severe epidemic keratoconj., herpes,adenovirus.
3. Ocular cicatricial pemphegoid
4. Chemical burn: alkali& acid.

Chronic Conjunctivitis

Trachoma

Definition:

It is chronic infective inflammation of conj & cornea of man.

- Caused by atypical virus.
- Characterized by formation of follicles – papillae – pannus.
- Healed by fibrosis leading to lid deformity & visual disability.

Etiology:

Trachoma is caused by atypical virus called Chlamydia trachomatis

It is atypical because:

1. Produces intracytoplasmic basophilic inclusion bodies (Provazek)
2. Produces no solid immunity (epitheliotrophic).
3. Large in size (up to 250 U).
4. Sensitive to sulfonamides & antibiotics.
5. Posses a cell wall.

Mode of infection:

- Through: conj. discharge carried by fingers – towels – flies.
- Incubation period: 6-12 days.

Epidemiology:

- Trachoma is endemic in Egypt affectign 80-90% of population.

It is also endemic in middle east – central Africa – central & east of Asia & East of Europe.

Pathology:

- Trachoma virus is an epitheliotropic virus. It multiplies within the epithelial cells conj., cornea and lacrimal apparatus.
- It secretes toxins that diffuse to the subepithelial tissue → chronic inflammatory reaction (follicle). (T1).
- The follicels ↑ in size pressing on the surrounding blood vessels → ischemia & central necrosis (T_2A).
- Conj. epith hyperplasia occurs → papillae formation (T_2B).
- Healing occurs by fibrosis (T_3).
- Hyaline degeneration may occur to the retained secretion & desquamated epithelium (in the closed crypts between papillae) → post trachomatous degeneration (P.T.Ds) which may be calcified post-trachomatous calcification (P.T,Cs.)

Clinical picture:

Symptoms "few"

1. F.B sensation 2. Heaviness of lids 3. Little discharge

Signs:

(I) Conj. Manifestations

According to MacCallen's classifiation there are "4" stages.

Stage 1 (T1):

- The upper palpebral conj. & fornix show: The early follicles.

* Minute (< 1 mm) & surrounded by dilated capillaries.

* Not raised.

* Not expressible.

* Fate: Pass to T2 or directly to T4.

Stage 2 (T2):

*** T_2A (typical follicles):**

- Large (1-3 mm).
- Raised.
- Expressible (If squeezed → gelatinous material).

* **T_2B (Papillary trachoma):**

The conj. show fine, pink, finger – like projection which:

a- Give the surface a velvety apearance.

b- Increase the wt. Of lid → mechanical ptosis.

N.B. The picture is not always typical So, T_2B is subdivided into

T_2b1 : Typical papillary trachoma.

T_2b2: T_2b1 + spring catarrh papillae.

T2c: T_2b1 + Chronic gonocovccal conjunctivitis.

Stage 3 (T3):

The palpebral conj shows:

1. White patches of fibrosis.
2. Arlet's line: whichi s a white line of fibrosis at sulcus subtarsalis.
3. P.T.Ds. & P.T.C.S.

In this stage (T3) complications start to occur (stage of complication)

Stage 4 (T4):

- The patient is not infective (healed trachoma).
- The clinical picture: usually as in T3 as (but conjunctival scraping shows no. I.B).

•WHO classification:

1-TF: trachomatous follicles:

F1(insignificant), F2(mild), F3(moderate) F4 (severe).

2-TI: .intense inflammation: obescuring > 50% of large deep tarsal vessels

3-TS : Tr. Scarring Grades 1,2,3

4-TT: tr. Trichiasis

5- CO : cor. Opacities: - Obescuring at least part of the pupil
- Vision 6/18 or less

2) Corneal Manifestations

1- Superficial Punctate keratitis: in upper part

2- Corneal follicles:

The upper part of cornea shows:

(i) Yellow follicles: Caused by aggregation of inflammatory cells between the epithelium & Bowman's membrane at the end of blood vessels giving a rosette appearance Herbert's rosettes.

(ii) When these folicles heal. They leave depressed pits (Herbert's pits) .

3- Trachomatous pannus:

Definition: Vascularisation + infiltration by chronic inflammatory cells. (in superficial layers of cornea).

Stages:

(i) Progressive stage: Infiltration occurs followed by vascularisation.

(ii) Regressive stage:

In this stage, infiltration regresses but the vessels never regress.

(thus, one sees the vessels extending a short distance in front of the infiltration.

(iii) Healing stage: (Dry – pannus = pannus siccus)

Superficial scar in upper part of cornea with Herbert's pits → serrated edge.

Types:

1. Thin pannus (P. tenius): Vascularisation & infiltration. are mild.
2. Thick pannus (P. carnosus) infiltration is excessive.
3. Vascular P. (P. vasculosus): vascularisationis excessive.
4. Annular P. (P. anulosus): all around.
5. Pannus siccus.

Fate:

- Resolution : if Bowman's membrane is not destroyed.
- Opacity : if Bowman's membrane is destroyed.
- Keratectasis : may occur.

4- Trachomatous Ulcers:

I) Typical tr. Ulcers:

- **Shape:** linear: horizontal & superficial.
- **Site:** related to the pannus (on its surface or at its edege).

II) Atypical tr. Ulcers:

- **Shape:** any shape.
- **Site:** any where (produced mechanically by P.TDs or Rubbing lashes).

Diagnosis:

1. ***Pathognomonic signs:*** as - **Conjunctiva:** shows P.T.Ds + Arlet's line.
   - **Cornea:** shows pannus siccus.
2. ***Conj. Scraping:*** stained with Giemsa stain shows inclusion bodies (intracytoplasmic & basophilic).
3. ***Immunologic tests***

•DD:

- 1- Follicular Trachoma: from other causes of follicular conj.
- 2- Papillary Trachoma: from other causes of Papillary conj.
- 3- Pannus : from other causes of Pannus.

Complications:

1- Lid:

(i) Pure trichiasis.

(ii) Cicatricial entropion.

(iii). Ptosis: Mechanical and . due fibrosis&weakness of Muller Ms

(iv) Chalazia: due to obstruction of meib. gland ducts by fibrosis.

(v) Mechanical ectropion of lower lid

(vi) Inflammation: -Blepharitis -Chronic meibomianitis

2-Conjunctiva:

(i) Posterior symblepharon.

(ii) Xerosis: due to atrophy of goblet cells or lac duct obstruction by fibrosis.

(iii) Hyaline&amyloid deg. Of upper tarsus& conj.

(vi) Pigmentation

(v) Plasmoma: plasma cell infilteration.

3- Cornea:

a. Ulceration. b. Pannus. c. Opacities. d. Keratectasia.

4- Lacrimal:

(i) Dacryoadenitis (ii) Dacryocystitis

(iii) Epiphora: due to obstruction of puncti & canaliculi.

Treatment:

(I) Prophylactic ttt: - Health education.

- Raising the standard of living.

- Combat flies.

(II) Curative:

A) Medical: As the trachoma virus is sensitive to sulfonamides and Broad spectrum antibiotics.

*** Systemic:** Sulfadiazine tab. (1gm/ t.d.s / 10 days)

*** Local :** - Sulfacetamide drop : 10-30%.

- Teramycin eye ointment ½% for at least 1 month.

B) Surgical (with medical ttt)

1. Topical anesthesia.
2. Lid is everted by Desmarre's lid retractor, Then:
3. If: **(i) Follicles:** do Expression

(ii) Papillae: do Scraping. **(iii) P.T.Ds. :** do Picking .

C) ttt of Pannus

(i) P. tenius: medical ttt.

(ii) P. carnosus: med. Ttt + scraping by a sharp spoon.

(iii) P. vasc.: med. Ttt + periotomy + actual cautery of B.V.

(III) ttt of complications

•Inclusion conjunctivitis

- **Organism:** Chlamydia trachomatis Type D
- **Etiology**: organism is transmitted from genitals by fingers or swimming pool water

•**Clinical Picture:** - Conjunctiva : follicles- Cornea: S. punctate Keratitis

•**Treatment:**Systemic & Topical Sulfonamides Broad spectrum antibiotic

Chronic catarrhal (simple) conjunctivitis

Definition: It is non specific chronic conjunctivitis.

Etiology: (1) If acute conj. is not well treaed.

(2) Chronic irritation by P.T.Ds. – Rubbing lashes.

Clinical. Picture:

1- Discomfort 2- Little discharge 3- Injection (esp. in fornices)

ttt: - Remove the casue. - Antibiotics drops

Follicular Conjunctivitis

Definition:

It is conj inflammation characterized by follicle formation.

•Follicle: •Are focal collection of lymphocytes in the substantia propria

• Appear as gelatinous elevation more in lower fornix.

•Causes:

1- Viral: - adenovirus, herpes, molluscum contagiosum

- cornea is free - heal without scarring

2-Chlamydia

3- Drugs (Atropine & eserine sensitivity)

- Lid& conj. Are red and edematous
- Rapid cure once drug is stopped.

4-Folliculosis

- Affects children
- Occur as a part of generalized lymphatic tissue enlargement in response to a criculating toxin.

Viral Conjunctivitis

• Causative agents:

- 1- Adenovirus: causing epidemic keratoconj.(EKC)(by droplet infection)
- 2- HSV, Enterovirus, Newcastle disease virus
- 3- Acute viral fevers: as measles, mumps, influenza.

Clinical Picture:

i) Lids: edema

ii) Conj.: Chemosis , hyperemia & follicles

iii) Discharge: usually (watery) , may be (MP or purulent)

iv) Preauricular Lymphadenopathy.

* Other signs:

1- Sore throat & Punctate keratitis in EKC

2- Lid vesicles in herpetic cases.

3- Sudden subconj. Hge: in acute hgic conjunctivitis.

•Fate :

1- Self limited, resolving in 7-14 days.

2- affection of the fellow eyes in few days.

•**TTT:**

1- Prevention:

i- Protect the fellow eye in unilateral cases.

ii- The pt. Should use separate towels& sheets(to be boiled)

2- Curative:

i- Supportive ttt: cold compresses & lubricants.

ii- Antiviral drugs in HSV.

iii- Local atropine in cases with corneal involvement

Allergic Conjucntivitis

1-Phlyctenular conjunctivitis.

2-Spring catarrh.

3-Giant Papillary Conjunctivitis.

(I) Phlyctenular Conjunctivitis

Definition: It is an allergic inflammation of conj & may be cornea (phlyctenular Kerato-conjunctivitis) in response to endogenous toxin.

Etiology: Allergy to endogenous toxin as

1. Exotoxin of streptococci (tonsillitis).
2. Tuberculo-protein.
3. Toxins of intestinal parasites.

Clinical picture:

Symptoms (i) Phlycten alone : discomfort & Hyperemia

(ii) Phlyctenular. Ulcer: - Pain, lacrimation … etc.

- Discharge (due to 2 ry bacterial infection)

Signs:

(I) Conjunctival Manifestations

The characteristic lesion is the Phlycten which is:

- A gray nodule.
- Size: 1-3 mm.
- Site: Bulbar conj. & cornea.
- May be multiple.
- Surrounded by area of Hyperemia.

- Phlycten : formed of lymphocytic aggregation covered with epithelium

The overlying epith is elevated (1^{st} intact & later ulcerate with 2ry infection.

(II) Corneal Manifestations

1- Corneal Phlycten (near limbus)

Site: - phlycten may occur superficial or deep to B membrane

Fate: (i) It may vascularize → phlyctenular Pannus.

(ii) It may ulcerate → phlyctenular Ulver.

2- Phlyctenular pannus.

- Site	: anywhere at the limbus
- Vessels	: straight.
- Edge	: rounded ....

3- Phlyctenular ulcer : may be

(i) **Marginal ulcer** (limbal).

(ii**) Ring ulcer**: due t fusion of multiple limbal ulcers.

(iii) **Fascicular ulcer**:

It is a superficial ulcer which creeps over the cornea toward the center (serpiginous) is supplied by a leash of vessels. When it heals, the track leaves an opacity maximum where it stops.

Complications:

1. **Lid:** Spastic ectropion.
2. **Conj.:** MPC (2 ry bacterial infection).
3. **Cornea:** Ulceration & opacity.
4. **Recurrence** (common if the cause is not treated).

D.D.:

(I) Phylcten: must be differentiated from:

a-Pinguecula. b-Episcleritis. c-Limbal spring catarrh.

	Phlycten	**Pinguecula**
1. Age	Young	Old
2. Shape	Rounded	Triangular
3. Colour	Grey	Yellow
4. Site	Any where	Nasal side
5. Supp, ulc & Vascularization	Present	Absent

	Phlycten	**Episcleritis**
1. Age	Young	Old
2- Level	Superficial	Deep
3- Color	Grey	Purple (deep vessels)
4- Movement	Moves with conjunction	Fixed to sclera (conj. moves over it)
5- Tenderness	Not tender	Tender
6- Ulc. & Supp.	Present	Absent
7- Adrenaline	Blanching (superf. Vessels)	No blanching (deep blood. V.)

	Phlycten	**Limbal spring catarch**
1. Season	Any	Summer
2. Itching	Absent	Present
3. Lesion	Nodular	Gelatinous masses
4. Ulc. & supp.	Present	Absent
5. Oesinophils	Absent	Present

أول ٢ جدول

Orally

II) Phlyctenular pannus: Must be differentiated from other causes of pannus:

	Trachomatous	Phlyctenular	Leprotic	Degenerative
1. Cause	Atypical virus	Allergy	Lepra bacilli	Absolute gl.
2. Site	Up	Anywhere	Anywhere	Anywhere
3. Border	Serrated	Irregular	Irregular	Irregular
4. Vessels	Branching	Straight	Few Bl. V.	Few l. V.

Treatment:

1- General:

(i) ttt of cause e.g, antibiotics (for septic foci).

(ii) Vitamins & good nutrition.

2- Local:

(i) Corticosteroids (drops & ointment).

(ii) Antibiotics for 2ry bacterial infection.

(ii) Atropine if cornea is involved.

(iv) Fascicular ulcer:

- The Ulcer: cautery with carbolic acid.
- Leash of vessels: periotomy + actual cautery at the limbus.

II) Spring catarrh

Definition: It is (chronic-bilateral-recurrent-seasonal) allergic conjunctivitis caused by exogenous antigen e.g, Heat – UV rays.

Incidence:

1. **Age:** Children & young adults.
2. **Sex:** More in boy.
3. **Season:** Hot season (summer & not spring).

Clinical picture:

Symptoms: Itching

Photophobia – lacrimation – Red eye.

Ropy (thready discharge).

Signs:

(I) Conjunctival manifestation

3 types exist.

1- Palpebral type*:* The upper palpebral conj. shows characteristic papillae

(i) Large & flat topped (ii) Bluish

(iii) Arranged as cobble stone (iv) fornix is always free

*** If lid is everted & left 1-2, minutes → a milky, sticky film is formed on the papillae whichi s very rich in oesinophils.**

-**Papillae**:-Formed of

- Central core of CT covered with thick epithelium with oesinophils
- The edge & center shows tiny twigs of bl.V.

•**Size**: is restricted by the fibrous septa attaching the conj. To the underlying tarsus. In severe inflammation ,these septa rupture& the papillae coalesce to form giant papillae

2- Bulbar type*:* Bulbar conj (near limbus) shows.

(i) Gelatinous masses: first med. & lat. then all around.

(formed of hypertrophied epith with CT core with hyaline degeneration)

(ii) Tranta's spots: clear spots within the gelatinous masses

(formed of Concretions of eosinophil&Necrotic epithelium)

3- Mixed type

(II) Corneal manifestations:

(i) Superficial punctate keratitis.

(ii) Superficial Ulcers.

(iii) Epithelial Plaque Fromation.

(iv) 360 degree Pannus

(v) Pseudogernotoxon: Stromal arcus

D.D.: 1- Bulbar type from Phlycten (see efore)

2- Papillae of palpebral type from paillary trachoma.

	Spring catarrh	**Trachoma**
1. Size	Large (cobble stone	Fine (finger – like)
2. Top	Flat	Rounded
3. Color	Bluish red	Pink (red)
4. Upper fronix	Free	Heavily affected

Treatment:

1. ***General ttt:*** anti – histaminic drugs.
2. ***Local ttt***

A) Symptomatic ttt:

(i) Dark glasses.

(ii) Cold lotions e.g, NA HCO_3 3% (to dissolve the mucous)

(iii) Cold compresses.

(iv) Vasoconstrictor eye drops e.g, adrenaline.

B) Anti-allergic ttt

(i) Antihistaminic eye drops e.g, antistine.

(ii) Cortisone drops or ointment (only in severe cases هام جدا) as prolonged use leads to complications.

(iii) Mast cell stabilizer:

e.g. 1- Disodium chromoglycate: 2-4 % (e.g, optichrome)

2- Lodoxamide

(that stabilizes mast cell membrane inhibiting its degranulation with release of chemical mediators leading to suppression of inflammation).

3- For resistant cases:

Recently. Immuno-suppressant agents are tried (e.g, cyclosporin)/

***N.B.* Spring catarrh is a self-limiting disease that seldom persists into adult life.**

Giant Papillary conj

- ***Etiology*:**

Irritation of conj. With

1- Contact lenses: Soft > Hard & Extended wear> Daily.

2- Ocular Prothesis (Artificial eyes)

3- Exposed corneal sutures.

- ***Clinical Picture*:**

Symptoms: i- CL intolerance

ii- Ocular Discomfort,FB sensation,Hyperemia& mucoid discharge.

iii- Vision: Blurred (mucous coating the CL).

Signs:

Giant Papillae: Site: upper tarsal conj. Shape: Large, flat topped

- ***Treatment*:**

1- Discontinuation of offending CL

2- ttt of Spring catarrh

Degeneration of conjunctiva

1- Pterygium **2- Pinguecula**

(I) Pterygium

Definition: It is triagnular encroachment of conj. over the cornea.

Etiology: Unknown. May be related to chronic irriation by Heat. & U.V.

Pathology:

- Conjunctival epith. Hyperplasia.
- The conj. Epithelium and fibro-vascular tissue encroachment → Cornea.
- Bowman m. & superficial sroma are destroyed.

Clinical picture:

Symptoms:

1. Disfigurement.
2. Diminution. of vision (if crosses the pupil).
3. Diplopia (rare).

Signs:

- A triangular fold (Commonly nasal & commonly bilateral).
- It consists of : apex – neck – body.

Types:

1. ***Stationary:*** Thin (membranous) less vascular.
2. ***Progressive:*** Thick (fleshy) more vascular.
3. ***Recurrent:*** (After surgical removal) usually associated with symblepharon.

D.D.:

	True pterygium	**Pseudo pterygium**
1. Nature	Degenerative condition of unknown etiology	A fold of conj. attached to base of a healed ulcer
2. Site	Commonly nasal	Any where
3. Side.	Commonly bilateral	Unilateral
4. Hook	Cannot pass under the neck	Can pass
5. Course	Stationary or progressive	Stationary

Treatment:

1. ***No ttt:*** If small & stationary.
2. ***Surgical Excision:*** if
   - (i) Encroaches on pupillary area.
   - (ii) Progressive type (as it will encroach).
   - (iii) Cosmetically annoying the pt.
   - (iv) Recurrent cases.

* ***Operations***

1- Excision with bare sclera technique

Principle: Pterygium is dissected & excised leaving a raw area of sclera (this allows corneal epith to cover the cornea before conjunctival epith reaches the limbus).

2- Simple excision:

Principle: As (1) But the conj. edges, are sutured together (no bare area, so, recurrence is common → **not used nowadays**).

N.B.: To prevent recurrence the following is tried.

1. Expose the bare area to B. iradiation.
2. Expose the bare area to Mitomycin C.
3. Excision & mucous membrane graft: as (1) but the bare area is covered by m. graft
4. Excision & lamellar (structural) Keratoplasty.

Beta irradiation

* ***Action: produces endarteritis obliterans.***

* ***Source: Strontium 90***

* ***Dose : 2000 – 3000 Roentgen*** (in divided doses)

II) Pinguecula

Definition:

It is a degenerative condition of conj. in old age where a yellow, raised, triagnular nodule is seen nasal to the limbus.

Pathology: Area of Hyaline degeneration with deposition of elastic tissue (yellow).

D.D.: From Phlycten (see before).

Treatment: Not ttt.

(but is cosmetically annoying the pt : exicsion).

Dry Eye

Definition: It is dryness of cornea & conjunctiva.

Etiology:

1. General :

i- Destruction of lac. Glands: due to

a- Collagen tissue diseases: as Systemic lupus eryth., scleroderma

b- Autoimmune disorder: Sjogren's syndrome

ii- Drugs: as Anticholinergics & Antihistaminics.

iii- Vitamin: A deficiency.

vi- Inflammation of lacrimal glands e.g. sarcoidosis

2. Local :

i- Conj. Scarring : as Caustic, pemphegoid, Steven-Jonsonsyndrome, Postirradiation, trachoma, diphteria.

ii- Conj.exposure Lagophtalmos

iii- Idiopathic (atrophy of the main & accessory lac. glands)

iv- Congenital absence of lacrimal glands

v- Tumors of lacrimal glands

11 85 9 الثلاثاء
11 85 9 الأربعاء

The crystalline lens

Anatomy

Written
Tr.P.10

(to see near objects)

It is an Elastic, transparent, Avascular, and Biconvex structure Which is suspended in its place by the suspensory ligament (zonule)

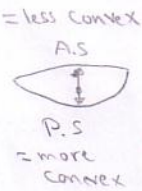
• Gross Anatomy

1. Relations

Anteriorly: Iris (separated by Posterior Chamber).

Posteriorly: vitreous (separated by Retro-lental space)

2. Shape:



i- Anterior surface.

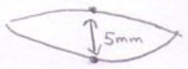
Convex (radius = 10 mm), its Centre: is the anterior pole.

ii- Posterior surface

More convex (r = 6mm) its, Center: is the posterior pole.

iii- Axis of the lens

The line joining the ant. & post. Poles (4-5 mm).

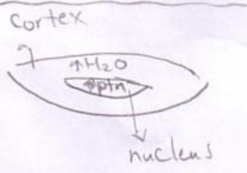


iv- Equator (Lens edge)

Gives attachment to the zonules – Eq. Diameter = 9-10 mm = (Double axis)

3- Consistency: (i) Young → soft (ii) Old → hard (↓ H_2O & fiber ↑ ← لأن كل ما الإنسان يكبر)

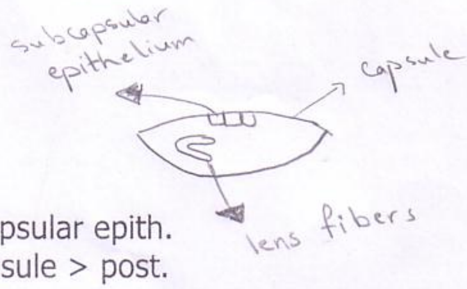
4- Refractive index: - Cortex: 1.39 - Nucleus : 1.42



5- Refractive power : +15 D – +17 D

Minute anatomy:

1. Capsule



- Highly elastic.
- Secreted by ant. Subcapsular epith.
- Thickness: anterior capsule > post.

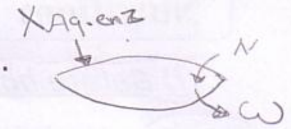
Oral: Only ocular structure from one cellular orgin?
Lens

Functions:

(i) Accommodation.

(ii) Semi-permeable membrane (Nutrition in & waste Product out).

(iii) Protection: of lens fibers from aqueous enzymes.



2. Subcapsular epithelium

- Site: line the capsule (anteriorly and at the equator).
- Shape: cubical, Columnar & Pyramidal.

Function:

(i) Ant cells secrete the capsule. → cubical & columnar

(ii) Eq. cells secrete lens fibers. → pyramidal

(iii) Posterior subcapsular epithelium used to fill lens vesicles by lens fibers in intrauterine life

3. Lens fibers

(i) Secreted by: equatorial cells

The new fibers are laid outside the older ones , which are pushed inward and undergo a process of sclerosis (loss of water) as $\frac{1}{3}$ Ptns & $\frac{2}{3}$ H_2O

(ii) Divided into:

① Peripheral fibers: soft (cortex).

② Central fibers: hard being compresed and sclerosed (nucleus)

(iii) Sutures: site of articulation of lens fibers.

(Y shaped: erect anteriorly "Y" & inverted posteriorly)

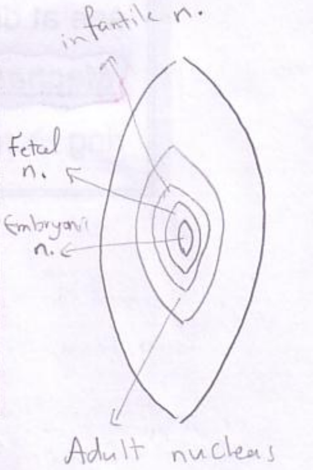
N.B.: The Nucleus; is divided into

(i) Embryonic nucleus: 1-3 months intrauterine

(ii) Fetal nucleus: 3-9 months (I.U.)

(iii) Infantile nucleus: up to puberty

(iv) Adult nucleus: After puberty



Nutrition:

(i) Before birth

Hyaloid artery

لسه transparent
لأن مش عايز أشوف حاجة

الشريان الزجاجي لأنه بيجري في vitrous body

(ii) After birth

Diffusion from aqueous

• Composition:

(i) Water: 65% (ii) Proteins: 34% (iii) Minerals 1%

• Meabolism:

Anaerobic (as the lens is avascular → no enough O_2). Oxidation occurs by dehydrogenation which requiers Hydrogen carriers as Vit. C & Glutathione.

• Functions:

(i) One of the refractive media of the eye (converging).

(ii) Accommodation.

(iii) Protect the retina from U.V rays.

لا يمكن استبدال وظيفتها بأي عدسة تانية

Accommodation

Definition: It is the ability of the eye to change its diopteric power to see at different distances (far & Near) → clear.

Mechanism: Contraction of cliary ms (circular fibers) → a smaller cilary ring → relaxation of the zonules → ↑ curvature and power of the lens.

Lens diseases ↗ Lens opacity (Cataract)
↘ " Malposition.

Oral: ماذا يعني رؤية edge of lens ?

حاجة ما دتش ← rupture of zonules

طبيعي من إيه؟

Edge = Prism
يشوف الدنيا ألوان

(Written هام)

Cataract

Definition: It is lens Opacification

Classification:

a- According to the cause (i) Congenital

(ii) Acquired either (traumatic, complicated or senile)

b- According to the site (i) Capsular: ant. or post.

(ii) Cortical: ant. or post.

(iii) Nuclear

c- According to the Age:

يعني لما أحتاج أعمل operation

(I) Soft cataract: Before the age of 25 years.

Includes: Congenital, Traumatic & complicated cataract.

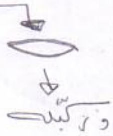
Nucleus: No hard nucleus.

Lens ptn: (soluble ptn) can be digested by aqueous enzymes. so, if the lens capsule is ruptured by trauma or operation → absorption of lens matter occur → no after cataract.

أي وسيلة اكتبتها في سنه ومش شايف المنظر ←

* أنا هانتقها و أدخل operation

→ insert needle into lens (needling operation) → Aq. enz. will continue the operation



ونركب intraocular lens

(II) Hard cataract: After the age of 25 years.

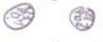
Includes: Senile, Traumatic compliated cataract.

Nucleus: Hard nucleus.

Lers ptn: (insoluble ptn) which can not be digested by aqueous enzymes so, if the lens capsue is ruptured by trauma or operation → soft lens matter will be absorbed but the nucleus will not → after cat.

راجل ٦٠ سنة اتعطل في عينه المنظر ←

↓
Needling
↓
Aq. enz هتدوب



↓
العيان مش هيشوف تاني لأنه مبقاش شايف حاجة

albuminoid

ttt: **(i) Soft cataract:** I/A or Lensectomy.

(ii) Hard cataract: ECCE or ICCE.

→ يروح لدكتور تاني → يقوله عندك → After cataract → الحل: تدخل بنفسك وتشيل opacity لأن الدكتور الأول مبيفهمش

Congenital Cataract

written
V. Imp

• Definition

It is lens opacification which dates since birth or shortly after

• Etiology:

(a) Hereditary
(b) Malnutrition
(c) Intra – uterine infection
(d) Drugs
(e) irradiation

• Characteristics:

(a) Commonly bilateral.

(b) Commonly associated with other congenital anomalies. (مش محتاجة irradiation مقتصرة بس lens)

(c) Commonly stationary. (not progressively) الميزة الوحيدة

(d) Hereditary may play a role.

Senile ↑ in years — Complicated ↑ in months — trauma ↑ in days

• Types:

هيجي كتابي علاج

① Total → ② Post. polar → ③ lamellar ④ Ant. polar

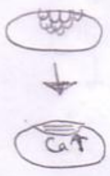
Oral ← بتيجي حسب الأسنان

(I) Anterior polar cataract

(Capsular)

Aetiology:

Delayed formation of A.C As, Prolonged contact between the cornea & lens → irritation of subcapsular epithelium at the ant. Pole → its proliferation and formation of mass of cells + calcium deposition ---------- opacity.



D.D. From acquired type (more common) due to: Small, Central corneal perforation

تفرق معانا في كلية علشان أفحص إن مفيش كتر G.anesthesia علشان لو فيه أي anomalies في القلب ما أرفضش لأخطاء

	Congenital	Acquired
History of red eyes	-ve	+ve
Corneal opacity	Absent	Present
Side	Bilateral	Unilateral (مش محتاجة واحد يحرم كبير زميله الاتنين)

Clinically → Disc shaped lens

(II) Lamellar cataract (Zonular cat.).

(Cortical)

Definition:

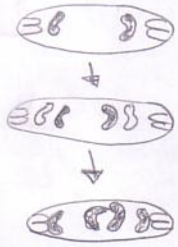
It is lens opacification involving one or more lamelae of the lens.

Aetiology:

→(i) Hereditary &

→(ii) Malnutrition of the mother during pregnancy especially vitamin D and ca as the child often Show ① Evidences of rickets

② Abnormality of permanent teeth



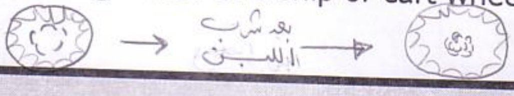
Clinically

With the pupil ditated, the lens opacity is composed of

① Central disc ② Projections (spokes or riders)

(عجلت قيادة سفينة) (عجلت عربيت كارو)

this resembles: steering wheel of a ship or cart wheel appearance

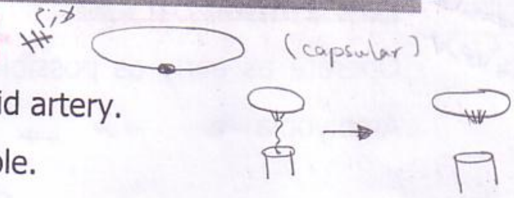


Explanation

(I) Disc: Vit. D & Ca deficiency → formation of opaque fibers. On recovery from this deficiency, clear fibers are formed pushing the opaque fibers inward → opaque lamella (this could be repeated.) → سابت كده التراء؟ الأم بشرب اللبن

(II) Riders; The equatorial cells don't recover at the same time. As some of them recover forming clear Fibers, those beside them continue to form opaque fibers (Riders).

(III) Posterior polar cataract:



Aetiology: Persistence of remenants of the hyaloid artery.

Clinically: Disc shaped opacity at the posterior pole.

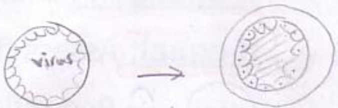
Vision: Markedly ↓ (as the opacity is close to the nodal point). 6/60 →

أعمل العمليه عند سن سنتين

(IV) Total cataract:

(cortical)

Due to Rubella infection to the mother in the 1st trimester.



The cataract operation is risky in this patient due to

ⓐ Associated cardiac anomalies (risk during general anesthesia).

ⓑ The virus remains dormant inside the lens for 2-3 ys (i.e operation → endophthalmitis). → Aq. cmt عند دخول → لازم قبل ما أدخل اتأكد إن virus totally died.

Normally : Meeting of fibers ↗ Anteriorly (Y shaped)
↘ Posteriorly (Inverted Y shaped)

N.B.: Other types

(i) Blue dot cataract (small dots scattered in the lens).

(ii) Sutural cataract (opacities at the Y sutures)

(iii) Coronary cataract (club shaped opacities at the equator)

→ Not of value (Behind iris) → vision 6/6

• Clinical picture: OF CONG. CATARACT

Symptoms: Given by the mother

- White pupil (leucocoria).
- Defective vision

Signs: one of the previous types is seen

• Compilations:

Bilateral opacity → Nystagmus

(As opacity interferes with foveal development)

Unilateral → Amplyopia & squint → Due to active neglect by mature brain.

• Treatment: Oral 10

في الأول أنا
بأفكر هتعرف
إزاي وإيه التداب
العادية الـ
مفروض أعملها ؟

(1) Unilateral cases

Operate as early as possible (at any age before the age of 6 ys) to avoid dense Amblyopia → بش ط → تغطية العين السليمة علشان تضغط الدماغ إنها تشغل العين التعبانة → وبالتالي تحسن العين تدريجيا

(2) Bilateral cases

If unequal: Manage as unilateral cases.

آخر

If equal: Assess the density of the opacity & the visual acuity (V.A.) by:

--red
++opacity

ⓘ Red reflex (بس مبيديش acuity بدقة) ← ⓘⓘ Fundus examination by ophthalmoscope

(iii) Optokinitic nystagmus (iv) Preferential looking. (الصورة المفضلة للطفل)

(v) VEP. (Visual evoked potential)

من خلال مجموعة من الكروت بها
خطوط متوازية والمسافات بينها
بتضيق تدريجياً لحد ما الطفل
ما يبصش على الكارت لأن
الخطوط مزغللة فأشوف
هو مسك لحد الكارت
رقم كام.

(rotating drum)

سرعة ↑

acuity ↓ ← of vision ← وعلى حسب الرقم أعرف مشاكل الـ lens

لازم العملية أسرع أسرع أسرع [illegible]

*If dense opacity:

Operate early (before the 3 rd month) to avoid nystagmus (irreversible problem).

However, early operation (before the age of 6 m.) is risky due to

(1) A.C is shallow. → damage to cornea → endothelial damage → Oedema. / → damage to iris

(2) Pupil will not dilate properly (dilator ms. Is not well developed.

• If not dense:

Wait until the patient can tell about his V.A (about the school age 5-6 yr)

دلوقتي إيه الحلول بكره بعد ما عرفنا نجرب الحاجة اللي قدامي.

If the V.A is 6/18 or better		**If Not**
- With glasses	→ Give Glasses	
- After mydriasis	→ Do visual iridectomy	Do Cataract extraction →

افتح شباك ف iris → يمر الضوء خلالها

آخر حل [illegible] في حال فشل باقي الحلول

• *Lines of ttt*

Oral → V.imp

(i) Surgical ttt **(ii) Correction of aphakia** (no lens)

Oral: = V.imp

Indications of congenital cataract extraction:

① Unilateral or Bilateral astigmatism

② Bilateral symmetrical dense: < 3 months

③ 〃 〃 faint: at school age if other measures failed

④ Total cataract

(i) Surgical ttt (Written ⑥)

(1) Irrigation - Aspiration (I.A)

- Through 2mm limbal incision, an anterior capsulotomy is done.
- This followed by Aspiration of lens matter with simultaneous Irrigation with saline using double way canula. ([illegible] collapse in lens)

The central part of the posterior capsule must be removed followed By ant. Vitrectomy because the infantile posterior capsule mostly opacify

سأل j ***(2) Lensectomy***

In which the lens is removed ----- using the vitrectomy machine → بيشيل vitrous و بيقطع أطرافها [illegible] قبل ما يشد retina

Advantage: No posterior capsule opacification.

Disadvantages: RD (more common). (retinal detachment)

→ I.C extraction is contraindicated in children due to strong zonule : Carries risk of retinal detachment.

(ii) Correction of aphakia

Aim: to avoid amblyopia.

Methods:

(1) Glasses. (2) Contact lenses. (3) IOL

But.

مثارة للغير في المدرسة { 1 → far 1 → near

(تقيلة عَ الـ nose 18 D)

لأن إطار النظارة عامل زي Prism

(1) Glasses: **(i) 2 pairs** **(ii) Heavy** **(iii) Constricted field.** (Tubular vision)

ميزتها ملهاش وزنة وكمان مفيش constricted field

(2) Contact lens: **(i) Difficult insertion & removal** **(ii) Complication (c.ulcer)**

(3) I.O.L: Power changes with age. (معقول يعني أعمل عملية كل سنة كل ما أغير الـ lens)

This explains why 6/18 with accommodation is better than 6/6 without it. لأنه هيضطر أستخدم اللي فوق

- So,

(1) In unilateral cases: Use contact lenses, to be replaced by the age of 2ys by IOL (2ry implantation)

(2) In bilateral cases: Use glasses, to be replaced by the age of 2 ys by IOL .

Senile Cataract

Definition:

- It is always ① Bilateral, ② Gradually progressive lens ③ opacity
- Affecting ④ old people.
- ⑤ Not suffering from local or general diseases. (زي شيب السكر)

Incidence:

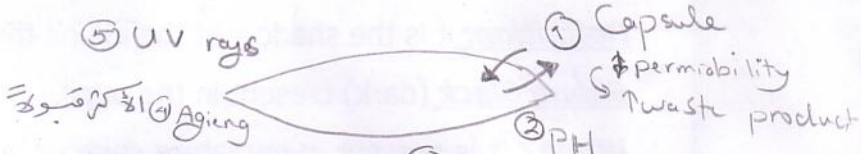
Age : Above 50 ys. → >45

Sex : Equal (m = f)

Hereditary : May play a role.

Side : Bilateral (but one eye preceedes the other) → Not symmetrical

Aetiology:



مجموعة نظريات

Unknown, But the metabolic disturbances may be due to: ③ Vit C & glutathione (No hydrogen carrier)

(i) Disturbed capsule permeability.

(ii) Disturbed pH.

(iii) Disappearance of metabolically important substances: vit. C, Glutathions.

(vi) Endocrinal distrubances. (Ageing)

(v) U.V. rays.

Whatever the cause, the lens undergoes "2 processes"

(1) Change in the water content (Hydration or sclerosis)

(2) Coagulation of lens proteins: as decrease pH (due to accumulation of lactic acid) → activated dormant enzymes (proteases) → breakdown of lens proteins → amino acid & polypeptides (opacity).

α & B proteases → ↓PH يؤدي لـ activation → (Ptns O O O ⇝ P.P) → ↑ H_2O

normal: ↑PH

Types:

(I) Cortical 70%

(II) Nuclear 25%

(III) Cortico – nuclear 5% (شبه Total بيبقى زي Congenital Cataract)

Methods of Examination

• Oblique illumination

(1) By * Toursh, or

* Slit lamp: with powerful illumination & Magnification

So → gives more details

(2) Aim: to examine

(العمق)

1. The lens opacity. 2. The anterior chamber depth.

([illegible])

3. The lens capsule. 4. The iris shadow.

N.B.: Iris shadow

Definition: it is the shadow of the iris on the lens opacity.

Shape Black (dark) cresent in the pupil.

When? It is present in immature cataract & becomes smaller as the cataract approaches maturity (approaches the anterior capsule) Occasionally: the shadow is seen in hypermature stage.

*** The shadow can only form; if a clear interval is present between iris & the opacity. * In immature stage, this interval is occupied by clear fibres.

* But in hypermature stage, it is occupied by aqueous.

• Red Reflex: in the dark room

Clear areas → Red.

Opacity → dark.

• Tomometry:

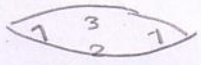
As IOP ---------- may be increased.

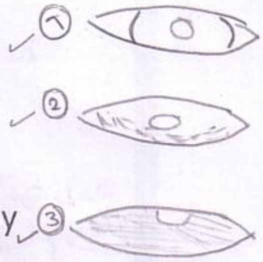
Senile Cortical Cataract

(لازم تعمي كده) Immature → Mature → Hypermature

- *Stages*

الحالة الأكثر شيوعاً



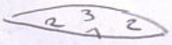


A- Immature stage: (the lens is not totally opaque)

Showing

1. Sectorial opacities at the periphery of the lens that progress gradually (ابتدائي وأولي) (Incipient stage).
2. The last fibres to be affected are the anterior subcapsular lens fibres.

ممكن تحصل (الحالة الأقل شيوعاً)



Symptoms: 22-B → 20

① ***Gradual drop of vision*** (from 6/6 → C.F) . (Main complaint) → index Hypermetropia
opacity → -- velocity of light → (++ refractive index → lights behind retina.

② ***Fixed musca.***

③ ***Uni-ocular diplopia*** (due to sectorial changes in R.I.) or polyopia. (صورتين من لوحة مختلفين)

④ ***Night Blindness,*** as the peripheral opacity interferes with the entery of rays to the peripheral retina. (which contain rods)

⑤ ***Glare & Coloured halos around light***
→ As in mucopurulent Conjunctivitis

Signs:

(1) ***Oblique illumination:*** → Lens → shows Grayish sectors.
A.C. depth → normal
Capsule: Normal.
Iris shadow → present

(2) ***R.R.:*** Black sectors against a reddish background

(3) ***Tension:*** normal

> •Immature cataract:
> - May be Cuneform (anterior cortical sectors)
> - May be Cupuliform (sheet in the posterior cortex)

Oral

(Swollen)

Intumescent lens → not stage

(لأنها ممكن تحصل ممكن لأ)

In which the process of hydration is suddenly exaggerated (due to rapid breakdown of lens ptn → rapid ↑ in osmalarity)

(الشكوى: في ٣ أيام نظري ينزل مرة واحدة وحاسس بألم وصداع فظيع.)

Symptoms:

(1) Rapid decrease of vision. → not gradual as normal senile cataract.

(2) Pupillary block (in predisposed eye) → ↑ IOP → ocular pain & Headache

Signs:

1- ***Oblique illumination:***

- Capsule → glistening & streched.
- Lens → shows water vacuoles.
- A.C. → Shallow.
- I. Shaddow → may be present.

2- Red reflex: may be seen (small areas appear red)

3- Tension: may be ↑ (in predisposed eyes) → in hypermetropic eyes.

Oral → (phacomorphic glaucoma)

lens morphology

B- Mature stage:

The lens is totally opaque

Symptoms: decrease of vision (Hand movement H.M.)

Signs:

(1) ***Oblique illumination*** Lens: is uniformly greyish white.
A.C.: normal depth.
I.Sh. Absent.

(2) ***Red reflex:*** Absent.

(3) ***Tension:*** Normal.

Fear of patient to do operation in mature stage lead to progression to hypermature stage (بعد ٣ أو ٤ سنين)

C- Hypermature stage: The lens loses water & shrinks

Degeneration → Liquefaction → Leak

Symptoms: Drop of vision (H.M)

Signs:

1-Oblique illumination

- Lens: totally opaque.
- Capsule: thickened, wrinkled with white (ca) & yellow (cholesterol) deposits.
- A.C. → deep.
- Iris → tremulous. (As loss of lens support to iris)
- I.Sh. → may be present. (in case of lens subluxation)

2 Red Reflex ***:*** Absent

3 Tension ***:*** May be increased (leakage of ptns → reach iris → toxic iritis → V.D of vessels of iris → Ptns → closed angle of Fontana.

Complications

① Leakage of degenerated (irritant) lens proteins: leading to

(i) Phacotoxic uveitis (iritis + cyclitis + choroiditis)

(ii) Phacolytic glaucoma > liquefaction of lens ptns

(The leaking ptn to will be engulfed by macrophages. The swollen macrophage may get trapped in the TM leading to 2ry glaucoma).

(2) Degeneration of zonules: leading to lens displacement (sublux. Or dislocation)

Types

(i) Typical Hypermature cataract: as before

(ii) Morgagnian type (Atypical type)

> nucleus وتحت

In which, the lens doesn't shrink & the degenerated lens matter becomes liquefied into a milky fluid in which the nucleus sinks by gravity to the lower portion of the lens.

Degeneration → liquefaction ~~→~~ leak

إزاي أعرف إن mature؟

عرفت مكان ال nucleus بيتقع لأسفل ← وطبعاً هيعمله إزاي أفرق؟ ← كنا قلولنا كده mature

هاسيبه ويحصل degeneration لل zonules، وهيزيد ال risk بتاع dislocation of lens

(Oral (هام جداً)

	Immature	Intumesrent	Mature	Hypermature
*** Symptoms of vision**	↓	↓↓ (C.F., H.M)	↓↓↓ (H.M.)	↓↓↓ (H.M.)
Signs				
(1) Ob. Illumination:				
- ***Lens opacities***	Sectorial	Sector + H_2o	Total	Shrunken
- ***Capsule***	Normal	Glistening	Normal	Thickened → التخين بالـ ه
- ***A.C.***	Normal	Shallow	Normal	Deep
- ***Iris.***	Normal	Normal	Normal	Tremulsus
- ***I. Shaddow***	Present	May be present	Absent	Absent
(2) R.R	Senn	Seen	Absent	Absent
(3) Tension	Normal	May ↑	Normal	May ↑
• ***Treatment***	ECCE	ECCE	ECCE	ECCE

Senile Nuclear Cataract

It is pathological lens sclerosis in which the lens transparency is affected (Water is essential for metabolism of Ptns which is anaerobic ⇝ ($\downarrow H_2O$ زيادة السن → Disturbance of metabolism)

Characteristics:

① Very slow (In progression) → not as cortical cat. (Why? Due to $\downarrow\downarrow H_2O$ in nucleus ??? → so breakdown of ptns is hard & very slow)

② The lens may acquire a colour (Early → yellow & late Brown)

(due to melanin deposition, derived from a. a tyrosine)

Grades:

not stages → لأنه بيأثر على كل الـnucleus بشكل homogenous

(1) *Grade I: Grey*

(2) *Grade II: Yellow*

(3) *Grade III : Light brown*

(4) *Grade IV: Brown or black (cataracta Nigra)*

Due to deposition of melanin ده منين؟ لأن تكسير Ptns هيؤدي إلى تحول Tyrosine إلى melanin وعلى حسب الكمية يكون اللون

Symptoms:

① Decrease of vision due to → Opacity

→ Increased R.I. (index myopia)

② Fixed musca.

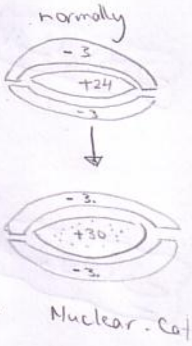
③ Uniocular diplopia.

العيان مع المغربية نظره بتحسن تدريجياً (Pupil dilatation)

④ Day blindness. (↓ light → Pupil constriction → light doesn't pass in opacity)

⑤ 2nd Sight: as the process of scleross markedly increase RI & hence increase lens power (leading to index myopia) ---- a presbyope may find that he can read again without his reading glasses. → تحسن خادع لأن Power of lens ↑↑

جديدة كن الى هناك



→ There is no CHL (no overhydration).

Signs:

Oblique illumination:
- Central lens opacity
- Capsule → normal
- A.C. normal depth
- I.Sh. present.

_R.R:_ Dark central disc in a reddish background.

(Black reflex in cataracta nigra)

Tension: Normal

D.D.:

1-From senile nuclear sclerosis (Oral & Clinical مهم)

Which is physiological lens sclerosis that doesn't interefer with the lens transparency.(

grey بيبقى لكن عادي وكمان نظره 6/6 بس ده كشكلات loss of H_2O

By: ① Red reflex: normal in S.N sclerosia. (One sure sign)

② Side: Bilateral & symmetrical in SN sclerosin

2- From other causes of gradual painless diminution of vision.

1- Open AG **2- Senile macular deg.**

3- High myopia **4- Retinitis Pigmentosa**

5- Primary op. n. atrophy

	SNS	SN. Cat.
→ Vision	N	↓↓
→ Side	Bilatrical & Symmet.	Bilateral but Asymmet.
→ Sclerosis	Grey	Yellow or Brown or Black
→ R.R	▨	◉

أهم (One sure sign)

Treatment of senile cataract

Surgical → lens extraction

(الحل الوحيد)

مهم جداً

(مينفعش أي حل من الـ congenital
لأن كلها Progressive)

السؤال الأول

- ***Time of operation (when?)***

When the patient is unable to do his work irriespective to the stage.
(ممكن ماأعملش العملية لو الحالة سنها ٨٠ سنة وعندها الضغط والقلب)

السؤال الثاني

- ***Type of operation (how?)***

(1) Intra-capsular cataract Extraction (ICCE)

(2) Extra-capsular cataract Extraction (ECCE)

1-ECCE: This is the standard technique

2 Advantages
Presence of post. capsule
1 No needing for peripheral iridectomy
2 Lens capsule is situated in the capsule

1- limbal incision

2- Capsulectomy(removal of a circular area of ant. Capsule)

3 Nucleus removal: either by ← بتاعت زي العدسة

i- delivery through large section (6-8 mm) Classic

ii- Phacoemulsification (machine liquefy the nucleus inside by very narrow needle) ← عشان ↓↓incision

iii- Phaco-laser ← وكمان أكتر ↓↓incision

طب ليه؟
علشان Astigmatism أقل بعد العملية بسبب ↓↓fibrosis

4- I/A of lens cortex using double way canula.

5-Implantation Of IOL (posterior chamber)

6- Closure of the wound

2- ICCE:

1- Limbal incision

2- Peripheral iridectomy (علشان vitrous ميحصلهاش herniation, ويؤدي لـ Pupillary block ← Glucoma)

3- Lens is extracted within the capsule (cryoextraction)

4- Implantation Of IOL (anterior chamber as there is no capsular support)
(أثبت الـ lens على iris)

السؤال الثالث

- Which eye 1st?

The more advanced stage except in intumescent stage → due to 2ry glaucoma – urgent

مينفعش العينين في وقت واحد
لازم مش أقل من ٣ أيام ←
خوفاً من Bilateral complication
→ Endophthalmitis (اللي سيظهر بعد 48ساعة من العملية)
=
Loss of eye

Complicated Cataract

Definition

It is lens opacification resulting from local eye disease or general disease

Aetiology

- *Local causes:* Written & Oral = 1→6

① **Corneal causes: as keratitis.** ↓nut & ↑ products

② **Ant. Ch. Causes: as glacuoma.** ↑ pressure on Capsule

③ **Uveal tract causes: as iridocyclitis.**

④ **Lens causes: as subluxation and dislocation.**

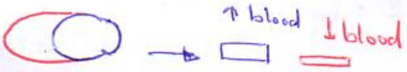
subluxation → iritis ↓ Comp. Cataract

⑤ **Retinal causes**: as - Retinal detachment → loss of aerobic nutrition & becomes anaerobic & accumulation of lactic acid.

- Retinitis pigmentosa.
- Chorio-retinitis.

⑥**Other causes: as**

- High myopia.



- Intra-ocular tumors.
- Topical drugs: as steroids, adrenaline, pilocarpine. local

Mechanism:

The metabolic disturbance is due to

① Diffusion of toxins ② Interference with lens nutrition

- ***General:***

لاسمو ٪ كرصه م٣

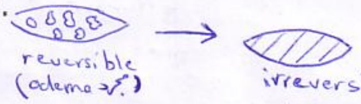
① **Diabetes Mellitus:** 2 types may develop.

i) Pre-senile cataract: as senile eataract but occurs earlies < 45 yr. & rapid progression

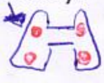
(بشبه قطع الثلج)

ii) Snow flack cataract: occur in juvenile, unconlrolled DM.

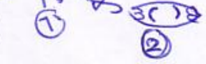
لازم تنزل وتاخدي ابنك وتروحي لدكتور اطفال وباطنة لأن المنظر ده دليل لأن السكر ٩٩٩٩



② **Hypoparathyroidism:** may show cataract & tetany.



→ ↓ Serum Ca → T. ① & ②



③ **Infestation:** e.g, ankylostoma (common in Egypt)

due to: (i) anaemia (decrease nutrition) (ii) Toxins of the worm

Ankylostoma

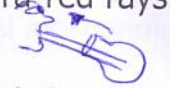
④ **Toxicity**: by 1. Steroids 2. Ergot

⑤ **Other diseases**: as 1. Cretinism (Hormonal) 2. Mongolism (chromosomal)

3. Galactoseamia (Enzymatic)

⑥ **Irradiation**: by 1. X-ray 2. Infra-red rays → glass blowers cataract

Tumour علاج


في مصانع الحديد و الزجاج

Clinical picture:

young
- birth (-ve)
Trauma (-ve)
Complicated

1) History: of any local eye disease or general disease.

2) Age: any age. (easy diagnosis if young but difficult if old)

3) General examination: for any general disease.

4) Local examination:

(i) Lens

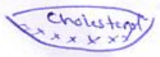
(a)Early → shows

(1) Posterior cortical opacity: this site is due to

→ No epith. Lining to the posterior capsule.

→ V. thin posterior capsule.

(2) Poly-chromatic lustre : due to diffraction of the slit lamp light by the granular opacity "cholesterol"



([illegible] granule of cholesterol

(b) Late → show ----- chalky white lens (due to Ca deposition)

(ii) Signs of a local disease → increased IOP (Glaucoma)

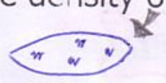
→ Posterior synechia (iritis)

(iii) Vision: is always less than expected from the density of cataract.

(iv) Retinal function tests: often bad.

يبقى حتى لو شيلت للمريض الـ lens مش هيشوف

لأن الـ retina مبتشتغلش.


H.M
vision (يبقى هو) immature stage

P.L.
no perception of light (يبقى هو) mature stage

5) Investigations: e.g, ultra-sonography .

D.D.

Oral (very important)

	Senile Cat.	Complcicated Cat.
(1) History	-ve	+ve (local or general dis)
(2) Age	Above 50 years	Any age.
(3) Opacity: - Early - Late	Greyish sectors Greyish white	Posterior cortical. Chalky white
(4) Eye (لو فحصت باقي العين)	Free	May show a local disease
(5) Ret. Function	Good	Often bad

Management

-Treatment depends on the cause.

- Prognosis is usually not good.

a- Local

لو Cataract خالص وكان الأول iritis

① ***Iridocyclitis:*** ttt of inflammation first, then 6 months after recovery → do cataract extraction (under umbrella of steroids). ☂

② ***Glucoma:*** either

i) 2 separate operation:

أفتح في Conjuctiva علشان drainage of aq. ← - Glaucoma operation first and 1-3 months later, do cataract op. → أفتح في limbus

(ii) Combined glaucoma & cataract operation Oral

③ ***High myopia:*** Do ECCE (for fear of viterous loss & R.D.).

How to ttt cataract & glucoma?

Cat & Gl (في حالة Hypermature الـ intumescent lens هنعمل)

Gl. & Cat (في الحالات نقول الطريقتين اللي فاتوا.)

b- General

Control the general disease. 1 st then do cataract extraction

- *The dangers of operation in uncontrolled D.M.*

① Possibility of infection. ☂ antibiotics

② Possibility of Hge (during or after the operation). ☂ vit C & K

③ Delayed wound healing.

*** Surgery**

Depend upon the age.

Soft: removed by I/A or Lensectomy Hard: as senile cat.

الكلام ده مهم جداً

It is very important to examine the eye properly and make sure that the diminution of vision is mainly due to the cataract and nothing else. Otherwise, cataract extraction will not be beneficial to the patient (وطبعاً أهم حاجة تفحصوا إيه؟ الـ Retina

Traumatic Cataract

Definition: It is lens opacification due lens injury

Aetiology:

إبرة أو سكينة

a- Perforating trauma ***(Capsular rupture):***

If small (e.g, F.B) Leads to Localized Opacity

If large Leads to

(i) Total cataract

(ii) Lens matter may float in A.Ch.

بطوبة أو عصاية أو أي صادم

b- Blunt trauma ***(Concussion cat):*** Posterior cortical & rosette shape

Mechanism: Blunt tr. → minute rupture in post capsule allowing aq. entery

senile cataract or complicated // مع هيلتخبط وده

المتكور بعد يومين ←

Vossius ring (Sure diagnostic sign to differentiate from comp. cataract)

It is a ring of brown pigment on the anterior capsule (due to impress of the pupillary border of iris on the lens)

Complications: (i) Iridocyclitis (ii) 2ry glaucoma

Treatment:

دقيق Meticulous ocular exam.(and US if cataract is dense) :

To detect other ocular complication e.g. vit. Hge. Or RD

(i) Medical ttt: Topical steroids and atropine.

(ii) Surgical ttt: Wait till the eye is quite.

(No I.C or Glaucoma) Then do cataract extraction

Unilateral Cataract

Oral مهم

Causes:

الأشهر / الأكثر شيوعاً

① Traumatic cataract.

② Complicated cataract (2ry to a local dis).

③ Rarely congential.

④ Senile (as one eye preceds the other).

The problem

Is that glasses cannot be given to correct unilat. Aphakia Because the aphakic eye will need large plus lens, which will magnify the retinal image. While the other eye is normal & so its retinal image is normal. The difference in the size of the retinal image (Anisokonia) will make fusion by the brain impossible ---- Binocular diploia.

to identical refraction
Anisometropia

& identical retinal image
An iso Konia

Treatment:

1. Cataract extraction.
2. Correction of unilat. Aphakia: By Contact lenses or IOL

Magnification of aphaKic correction:

① Glasses: 1:1.3
② Contact lenses 1: 1.1
③ IOS 1: 1

علشان كده هو ده الأفضل

After Cataract

Written
أكثر أهمية من
اللي فاتوا

Definition It is an opacity in the pupillary area, seen after

مينفعش بعد ICCE لأن
شلت الـ lens كلها بأنبوبتها

(i) Cataract operation (ECCE) or (ii) Trauma (with capular injury) → perforatting

Composition After cat. Is composed of

(1) Part of ant. capsule + post, capsule.

الأخطر اللي أنا
خايف منه

(2) Remnants of lens matter.

(3) Hge & exudate.

(4) Proliferated subcapsular epithelium. (due to injury to epithelium by instruments)
اللي تم استخدامها في العملية

Clinical types:

(1) Opacified posterior capsule (2) Sommering ring. (3) Elschnig pearls.

Complications

(1) Iridocyclitis (2) 2ry glaucoma

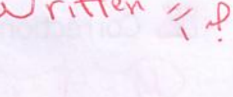
Treatment

If interfered with vision

أسهل تفسير طب إزاي قطع بسيط في Post. caps. ممكن يحسن الرؤية من خلالي؟ ← cut in post. capsule

1- If Thin: do Capsulotomy either Surgical or by YAG laser

2- If Thick with : do capsulectomy → limbal incision
→ by forceps & scessor to cut part of the cataract after pupillary dilatation



وجود fibrin في الـ exudate يخلي Post. caps. stretched على الآخر فيتشد من الناحيتين ويكون يعمل فتحة أوسع من الـ Pupil.

Displacement of the Lens

Subluxation of the Lens

Written مهم !!

Definition:

It is lens displacement due to partial absence or tearing of the zonles

Aetiology

(1) **Congenital**: e.g, in Marfan's syndrome

After trauma → ↑↑ horizontal diameter (Stretch of ciliary body → zonules)

(2) **Acquired** : (i) Trauma (++++)

: (ii) Degenerative conditions as:

Hypermature cat., Iridocyclitis High maopia

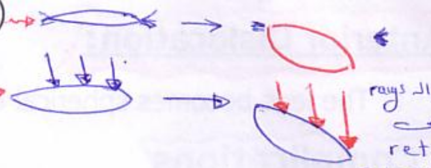
→ Degeneration (toxin)

Clinical picture

Symptoms:

1- Drop of vision due to:

- Myopia (due to ↑ lens carvature)
- Astigmatism (due to lens tilt).
- Complications.
- Interference with accommodation.



شايفين كدا ال rays ما تتجمعش ع retina في نقطة واحدة

2- Uniocular diplopia:

If the edge of the lens crosses the pupil (one image through the phakic portion of the pupil and another through the aphakic portion)

Signs: Oral

(1) A.C.: Irregular depth + 3 causes in Cornea.

(2) Iris: tremulous (iridodonesis)

(3) Lens: - Edge → may be seen - Phacodonesis

يحصل لما أحرك المريض كده بيتهز ويرجع واحدة

(4) Slit lamp: may show vitreous herniation through the pupil

* why? Because lens & vitrous are transparent (ودة مش ممكن يظهر بال torch العادية)

Complications:

(1) 2 ry glaucoma, (2) Iridocyclitis (3) Cataract. (4) Dislocation

لأ toxins تبع عن ال zonules

Treatment: Oral هام

(1) No complications → Glasses → hard lenses مينفعش → ليه؟ → irregularities لأنه تعمل في Cornea وليس في lens

(2) If there complications or diplopia → lens extraction either by:

عشان زي المعلقة وأخرج ال lens (كلها) خايف تفلت مني وتبقى dislocation.

(i) Hard lens:- Scooping + ant. virectomy

(ii) Soft lens: Pars plana lensectomy. by vitrectomy machine with no scooping (لأن vitrous & lens are Soft.)

Dislocation of the Lens

Written
ضعيف

Definition

It is lens movement due to total absence or tearing of the zonules.

Aetiology as subluxation

Types:

1) Anterior Dislocation. (Counter coup-effect)

2) Posterior Dislocation.

Clinical Picture:

***Anterior Dislocation:**

The lens becomes spherical & resemble a globule of oil in A.C.

- **Complications**

الأخطر (i) Corneal opaification (due to endoth. Damage) → which has poor regeneration

(ii) 2ry glaucoma (due to pupillary block) → Gl. Inversus

(iii) Iridocyclitis and Cataract.

Dilatation of pupil → relieve the pup. Block → decrease IOP
(glaucoma inverses, worsens with miotics)

2) Posterior Dislocation:

- The same clinical picture of aphakia +
  1. No history of eye operations
  2. No scar
  3. No iridectomy
- ④ lens can be seen by ophthalmoscope.

Oral: How to differentiate from aphakia?

Fate: (i) Remains quite. (ii) Leads to complications (as iritis, 2ry gl, cataract.).

Treatment:

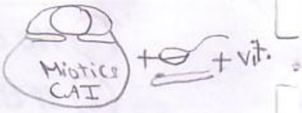
Ocular Emergency (لتوقي من complications اللي مكتوبة فوق)

(1) Anterior: **Preoperatively give** → miotics: to keep the lens in A.C

لأن لو رجعت ورا تاني هاضطر أشيل vitrous

→ and Diamox; to decrease IOP

+ Lens extraction by scooping (بواسطة معلقة) + ant. vitrectomy



(2) Posterior: **If Quite:** correction of aphakia

If Complications occure: do lens extraction.

- Hard lens : Viterectomy (إزالة vit. بالكامل) + scooping after floatation to avoid injurying Retina
- Soft lens: Viterectomy + Lensectomy

Operations for Cataract

(I) Pre-operative Examination

(A) *Greneral*

① Mentality & cooperation (أساسها هاتخذ بعض القرارات زي طريقة التخدير مثلاً) تحديد مدى نفع وعملية المريض والي على

دكتور أسنان ودكتور أنف وأذن ② Dental and ENT examination: for any Septic foci: (tonsits, teeth)

دكتور باطنة ③ Medical examination; for (i) Bl. Pressure, bleeding time

(ii) Causes of straining e.g, chronic cough, constipation.

④ Uro-genital examination: for prostatic enlargement.

(B) *Local:*

الكتاب الأول

(1) Lid: should be free from infection, P.T.Ds. trichiasis

(2) Lacrimal reg test: should be -ve

(3) Cong.: smear is taken (if +ve the specific antiotic is given)

(4) Cornea: should be free from keratitis

(5) Iris: to exclude → acute iritis.

(6) Lens: for → stage of cataract & lens position

الكتاب الثاني

(7) Tension: If T +++ do gl. Operation 1st.

(8) Fundus: To evaluate the retina & op. n. (in immature cat.)

الأهم

(C) *Retinal function tests*

← المريض سأل هاشوف بعد العملية يا دكتور؟

I) Macular function tests (cone function = retinal centre function)

(أي كده) **(1) Vision** If H.M. or better → Good prognosis. if less → Bad prognosis.

(2) Pupillary reaction (to be sure that visual pathway is healthy) → light reflex

(3) Color vision (to test cones which are present at macula)

(4) Testing the form sense: الشكل Black perforated disc (with 2 or 3 holes) is put in a trial frame & light is thrown on the patient's eye. **If the patient can count the holes → healthy macula.** (as discrimination test)

إطار نظارة معمل للتجارب

Macula سليمة ← لازم الراجل يعرف النقطتين نقطتين

Macula خربانة ← الراجل هيشوف النقطتين نقطة واحدة

(II) Testing the retinal periphery

1. **Visual field examination** If the V.A. is better than C.F. 100 cm
2. **Light projection:** with the patient:

ثلاث تعليقات هايفة بس مهمة 1 imp. imp. i- In a dark room ii- looking forward iii- with the other eye covered (

- Light is thrown from different directions & the pt is asked to point to it by his finger. If he can → Good projection If he can not → bad projection

(III) Other test:

A) Electro-physiological Tests:

(1) Visual Evoked potential

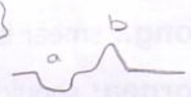
- Light stimulation of retina produced waves recorded over the occipital lobe.
- Uses (1) Measuring V.A. in children.(بُص صفحة 80 بالأسفل)

(2) Macular function test the macula has a large cortical representation

(2) Electroretinogram (ERG)

Def: It is the electrical activity of the retina on exposure to light.

- It is recorded by an electrode placed on the cornea.
- A (-ve) **a -wave** and a +ve **b-wave** are recorded .

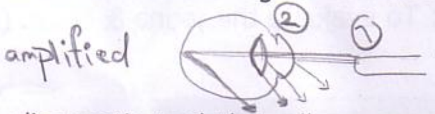


- A weak ERG response indicates diffuse retinal disease e.g. r. pigmentosa.

(3)Electrooculogram (EOG)

Def: an electrical recording based on standing potential of the eye were the cornea is -ve in relation to the retina. It records ionic and metabolic changes in the RPE & neuroretina.

B) Ultrasonography

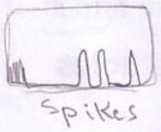


Def:- Ultrasonography is a non-invasive diagnostic tool that allows examination of the ocular structures in the presence of media opacities such as opaque cornea, cataract, or vitreous hemorrhage.

①- Sound waves of very high frequency are projected through a special probe to the eye.

②- Sound is reflected at interfaces between tissues e.g, between lens & vit.

③ ③- Reflected sound waves are amplified & recorded as:



Waves (A. Scan) → measured the axial length of the eye (biometry).
→ Reveals the density of abnormal tissues. (e.g, FB)

Picture (B-scan): detects: Vitreous Hge, R.D., IOFB, Intraecular tumors

Oral: Types of ECCE? → typical (through large section)
→ phacoemulsification
→ Phacolaser

II- Types of cataract operations:

	(1) I.C.C.E	(2) E.C.C.E
(1) Principle	Complete removal of the lens within its capsule after breaking the zonule	Lens extraction (leaving the whole post. Capsule & part of ant. capsule)
(2) Indication	(1) Subluxated, (2) Or dislocated lens	The operation of choice espechialy in (1) Young pt (< 40 yr) strong-zonule (2) Comp. cat. Due to high maopia . (3) If P.C. IOL is planned.
(3) Contraind	Are the indications of ECCE	Are the indications of ICCE

4) Advantages → Less operative time
→ Less manipulation (↓ iritis) → ↓ glucoma → No after cataract.

(3) Phacoemulsification (you need foldable IOL)

A recent operation in which: → then removal by double way Canula.

Principle: The ultrasonic probe of the phacemulsifier machine vibrates very rapidly (40000 vibe. / sec) to transform the lens substance into an emulsion which is removed by I/A.

(4) Phacolaser: In which (you need rollable IOL)

the lens substances is dissolved using Erbium – YAG laser Then removed by I –A

Intraocular lens implantation

1x2 ***1- Hard lenses:***

- Material: polymethyl methacrylate (PMMA)
- Design: ① A.C. ② P.C

2x1 ***2) Soft lenses:*** - Material ① Silicone ② Acrylic.

- Design: PC (Posterior chamber IOL)
- Advantage: Foldable so can be implanted through small incision → which done by Phacoemulsification or Phacolaser

Indications:

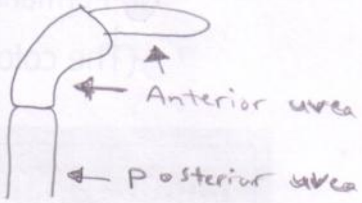
- Unilateral aphakia or untilat cataract (with good vision in the other)
- Bilat cat. If glasses & C.L are not suitable (allergy-parkinsonism)

Uveal tract

* It is the inermediate coat of the eye ball.

* It consists of : - Iris & C.B → anterior uvea

- Choroid → posterior uvea



Anatomy

Iris

Written 16

Gross:

* It is the anterior part of uveal tract.

* It is a pigmented circular diaphragm perforated in its centre (pupil)

* It divides the space between the cornea & the lens into A.Ch & P.Ch.

* It has 2 borders & 2 surfaces.

Borders: (1) Pupillary border: is the free border

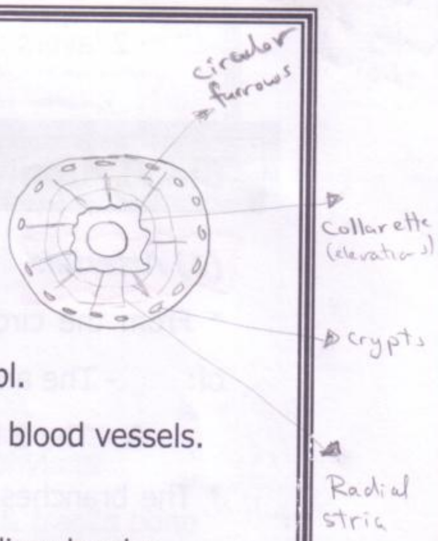
(2) Ciliary border: attached to the middle of ant. surface of C.B.

Surfaces: (1) Posterior surface: smooth & darkly pigmented

(2) Anterior surface: shows fine irregularities "iris pattern"

(بصمة ال iris)

Irirs pattern



*** Fine irregularities on the ant. Surface.**

***Include:**

1- Elevations

formed of Circulus minor

ⓘ collarette: irrigular (zigzag) circle near the pupl.

(ii) Radial striation: corresponding to the stromal blood vessels.

2- Depressions

(iii) Iris crypts: depression near the collarette & ciliary border.

(iv) Circular furrows

Colour:

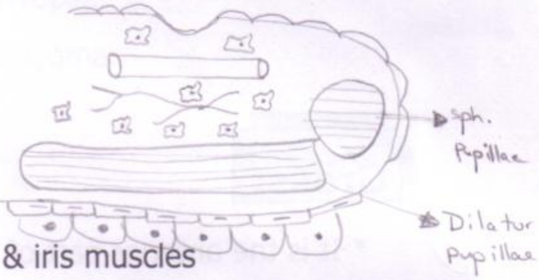
(i) At birth often blue or light gray

(ii) Permanent colour is reached by the age of 1 year

(The colour depends on the amount of pigment in the stroma)

Minute anatomy:

A section in the irirs shows



(1) Endothelium

- One layer of falt cells- absent over the crypts
- Continuous with corneal endothelium

مفيش مشكلة من الاحتكاك مع cornea (lined by endothelium)

(2) Stroma

- C.T. containing: Bl.V., Nerves, Pigment cells & iris muscles

* *Iris muslces*

(i) Sphincter pupillae

A circular band (1mm broad) which run around the pupile

(ii) Dilator pupillae

A radially arranged muscle, which run from the CB. Border → pupil

(3) Pigmented epithelium:

مشكلتها الاحتكاك مع lens

محمية من lining cupical

- Continuous with C.B. epithelium
- 2 layers : anterior layer → flat & posterior layer → Cubical.

Blood supply:

(1) Arterial:

* From the circulus arteriosus iridis major: which is formed from branches of: - The ant. Ciliary arteries (from the muscular arteries)

& - The 2 long posterior ciliary areries

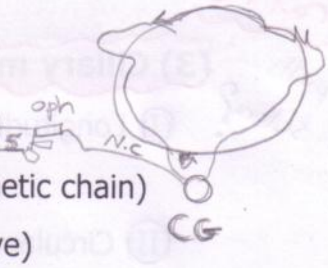
* The branches from the major circle pass radially in the iris stroma, till they reach the pupillary border where they anastemose to form the CAI minor.

(2) Venous

The veins of the iris drain into the vortex veins.

Nerve supply:

1. Sensory: 2 long ciliary nerves (from the naso-ciliary nerve)



2- Motor: Sympathetic to dilator ms (from cervical sympathetic chain)

Parasympathetic to constrictor ms (from 3 rd nerve)

(the motor fibers reach the iris via short ciliary nerves)

Function:

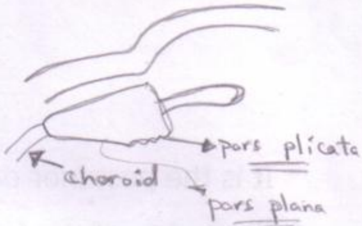
(1) Function of the pupil (seep later)

(2) Iris crypts → drainage.

The ciliary body

Written 16

Gross:



* It is the **intermediate part** of the uveal tract.

* It extends from the iris to the choroid

* **Shape:** triangular inantero-posterior section

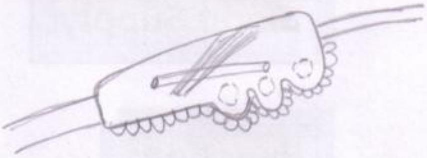
(1) Base (ant): with the iris attached to its middle

(2) Outer surface: separated from the sclera by supra ciliary space.

(3) Inner surface: - Gives origin to the zonules

- Divided into 2 parts → pars plicata (ant.)
  → pars plana (post.)

Minute:



(1) Ciliary epithelium: continuous with iris epith

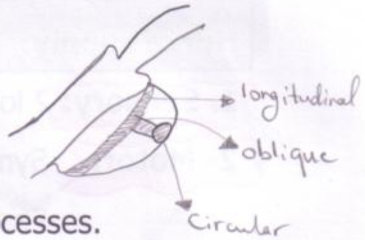
(2)Ciliary processes: 75 plication.

Each process is formed of a wide capillary covered by 2 layers of epithelium.

Oral !!

Who pulls spur of sclera?

(3) Ciliary muscles: 3 parts



- (I) Longitudinal (outermost) extends form scleral spur to the suprachoroid lamina
- (II) Circular (inner ant.) forms a ring around the ciliary processes.
- (III) Oblique: connects (i) & (ii)

(4) Stroma: C.T containing Bl. V., nerves & pigment cells

Blood supply & nerve supply

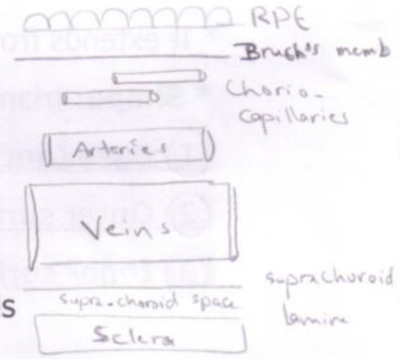
as the iris

Function:

1. **Ciliary processes** → aq. formation
2. **Ciliary muscles** → Circulas fibres → accomodation
   → Longitudinal. F. → aq. drainage

Choroid

Written (صعب [illegible])



* It is the posterior part of uveal tract.

* It consists of the following layers:

1- Suprachoroid lamina

2- Vascular layer:
   (i) Outer : large vessels.
   (ii) Middle: small vessels.
   (iii) Inner: chorio-capillaris

3- Bruch's membrane

Blood Supply:

from short ciliary nerves

Function:

Nutrition to the outer retinal layers

Uveitis

* It is inflammation of the uveal tract.

* It may be: 1- Anterior Uveitis (iridocyclitis)
2-Posterior Uveitis (choroiditis)
3-Pan – uveitis (iridocycitis + choroiditis)

Irido - cyclitis

Definition:

It is inflammation of the iris & C.B.

Aetiology

(I) Exogenous: caused by either

(1) Trauma: blunt or surgical trauma.

(2) Exogenous Infection:: following penetrating trauma or operation

(II) Endogenous :

A) 2ry to ocular diseases:

(exudates)
(1) Keratitis. (diffusion of toxins)
(2) Scleritis
(3) R.D. → lactic acid
(4) Subluxation & dislocation
(5) IOFB
(6) IO tumors.
(7)Iritis anaphylactica : due rupture of lens capsule releasing lens Ag.
(phaco-anaphylactic glaucoma) or uveitis

B) 2ry to systemic diseases: -

1- Arthritis : as Ankylosing spondylitis.

2- Granulomatous diseases: as sarcoidosis

3- Endogenous infection: blood borne infection

Organisms : May by

i- Bacteria: strept., staph., TB, $. **iii-Protozoa**: Toxoplasmosis

ii-Virus: HSV, HZV,CMV & measles **vi- Fungi :** as candidiasis.

شفوي مهم جداً

C) Autoimmune syndromes:

1- Behcet syndrome:

Local: - bilateral, recurrent iridocyclitis

- Retinal vasculitis.

General - Oral ulcers (aphthous) &genital ulcers.

2-Vogt-koyanagi -Harada syndrome:

Local : - bilateral recurrent iridocyctitis

- Exudative choroiditis → Exudative RD.

General: deafness, vitiligo (بهاق.), poliosis (رموش بيضاء)

3 - Fuch's heterochromic iridocyclitis:

Unilat. Recurrent iridocyclitis ,in young females with heterochromia.

4- Sympathetic Ophthalmitis

Clinical picture:

Oral هام جداً

* Symptoms

(1) Pain: * Due to → (1) Irritation of iris nerves by toxins

(2) Spasm of iris & C.B. ms

(3) 2 ry glaucoma.

* Pain here is characterised by:

(i) Being neuralgic (dull- aching) & → Pain in all nerves of iris

(ii) more at night (stagnation of toxins) المريض مش قادر ينام بالليل من الألم

(iii) Referred to the eyebrow

(2) Photophobia (3) Lacrimation (4) Blepharospasm

(5) ↓ of vision: due to (الأهم)

(i) Early: 1. Cornea: Hazy (edema) & Kps.

2. A.C & vitreous : Turbid (exudate) .

3. Lens: pigment deposit on ant. Capsule

4. Spasm of ciliary ms → myopia (1-2 D).

5. Macula: oedema (prostaglandin diffusion to the posterior pole) → Up to CME

(الضوء أصلاً مش قادر يعدّي)

(ii) Late: due to compliations e.g, cataract, glaucoma.

Oral T.P. 16

Sure signs ① Cornea: KPs ③ Iris: Muddy
② A.C: Aqueous flare ④ Pupil: Miosis

Muscle spasm → C.B → Myopia
Muscle spasm → Iris → Miosis

* Signs

(1) **Lid:** oedema

(2) **Cong:** ciliary injection.

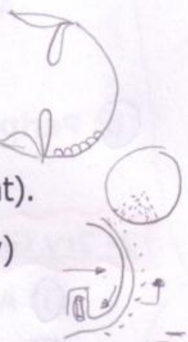
(3) **Cornea :** → Hazy (edema)

→ Keratic precipitates (K.Ps): these are

- Inflammatory cells (from dilated iris & CB vessels)

site: - Deposited on the corneal post. surface (convection current).

- Shape: triangular in middle & inferior zone (due to gravity)



(4) **A.C.:** - Aqueous flare(plasmoid aq.) & cells.

- Hypopyon (in severe cases)

- Hyphema : Haemorrhagic iritis as in (trauma, viral & D.M)

(5) **Iris:** وحل - طيني Muddy (loss of pattern) due to accumulation of edema in the stroma & exudate on the surface

(6) **Pupil:** (i) Early: constricted.

(a) Congested iris vessels → straight

(b) Irritation of iris ms (but the sphincter ms is stronger)

(ii) Late: irregular (due to synechia formation)

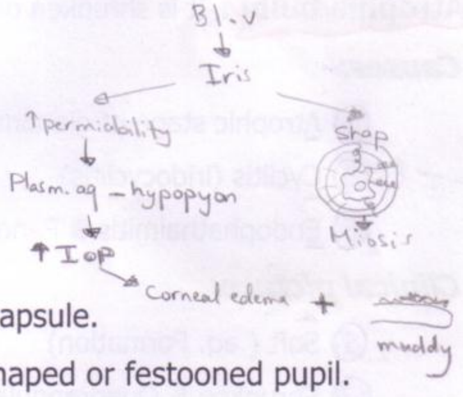
(7) **Lens :** : pigment deposit on ant. Capsule

(8) **C.B.:** Tender & spasm of ciliary ms → Myopia

(9)**Vitreous:** Hazy (inflammatory exudate poured from C.B.)

(10)**Tension**: Acute phase: low (cyclitis→ ↓aq.F) then increased (pl. aq.)

The chronic phase : increased (Synechia formation)



Complications

Written & Oral T.P. 16

1. Synechia formation:

(a) **Posterior synechia:**

Adhesion between the iris & the lens capsule.

(i) Localized: on mydriasis → pear shaped or festooned pupil.

(ii) Ring synechia: (seclusio-pupillae) Adhesion between the whole pupillary border & lens capsule → iris bombe

(iii) Blocked pupil : (occlusio-pupillae): As (ii) +
Organised exudate in the pupil

(iv) Total post. Synechia:

Adhesion between the whole post. Surface of the iris & lens (A.C. is deeper at the priphery > the centre)

iritis

(b) Peripehral anterior synechia (PAS)

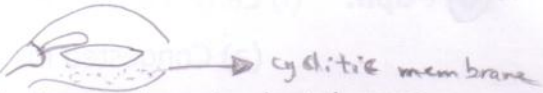
2- 2ry Glaucoma:

- **(i) Acute iritis:** due to plasmoid aq., hypopyon
- **(ii) Chronic iritis:** due to synechia formation (Ring S.& PAS)

3- Complicated cataract:

- Due to: inflammation& may be prolonged use of steroid.
- Shape: → Early: posterior cortical with polychromatic lustre.
  → Late: chalky white.

4- Cyclitic membrane:



* It is organised exudate (from C.B.) collecting in the retro-lental space.

* Contraction of this membrane → Tractional R.D.
& → C.B detahment → ↓ aq. F → Hypotony

cyclitis

5- Endophthalmitis & panophthalmitis

6- Atrophia bulbi

7- CME: due diffusion of inflammatory mediators

Atrophia bulbi : It is shrunken organised globe.

Causes:

① Atrophic stage of glauoma
② Perforating trauma. or blunt
أهم سبب ③ Cyclitis (iridocyclitis)
④ Detachemen (R.D).
⑤ Endophathalmitis & Panophthalmitis.

Clinical picture:

① Soft (aq. Formation)
② Shrunken & Quadrangular (pressure by the recti)

③ No P.L. (لين مفعوصة متوقع منها إيه؟)

Phthisis bulbi: It is shrunken disorganised globe.

حتى شكلها بقى غريب

(only in Cases of Endophthalmitis)
by diffuse fibrosis

Investigations

(Reading)

(1) History : Trauma, D.M. T.B. $

(2) General exam : For specific iridocyclitis

(3) Radiological : ***X ray :*** -Chest (T.B,sarcoidosis)
- Joints,hands& feet: for arthritis

CT scan : sinus.

(4) Laboratory :

Urine: Pus, sugar.

Blood: Wasserman, ELISA

Skin : Tuberclin

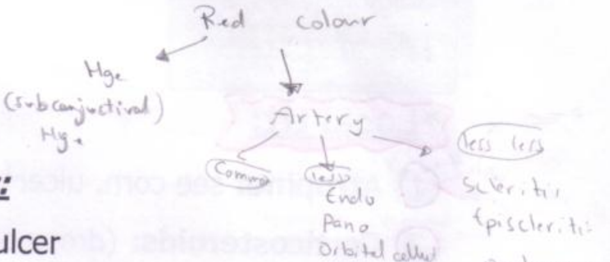
(5) Immunological Tests: - HLA : for Behcet, VKH syndrome,
- ANA: for arthritis

(6) Tissue sampling: - conjunctival biopsy
- AC or vitreous aspirate: for cytology& PCR

Differential diagnosis:

From other causes of RED eye

Oral
هام جداً

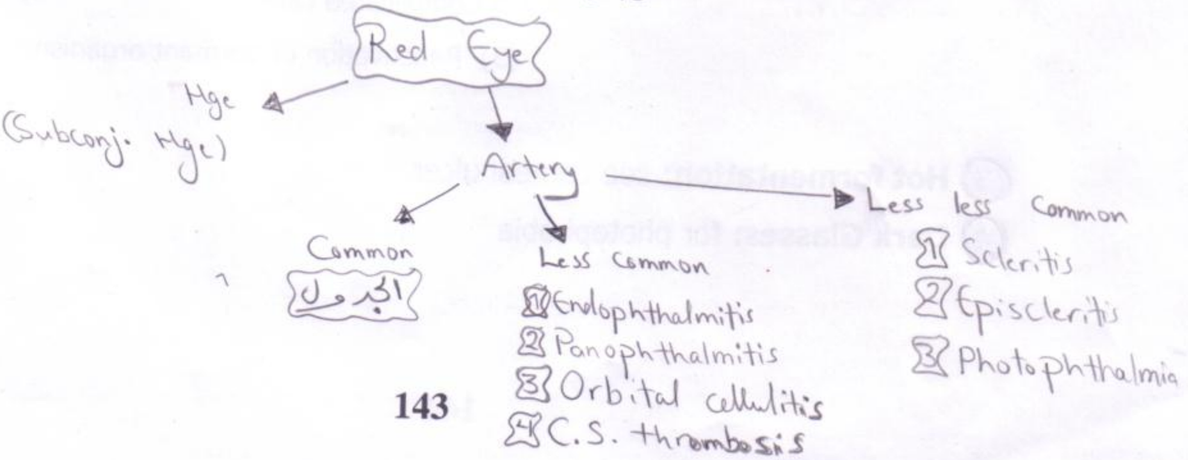


Most common causes:

(1) Acute conjunctivitis (2) Corneal ulcer
(3) Acute iritis (4) Acute congestive glaucoma

Other causes:

(1) Endophthalmitis (2) Panophthalmitis
(3) Orbital celluitis (4) Cav. Sinus thrombosis
(5) Episcleritis (6) Scleritis
(7) Photophthalmia (8) Subconj Hge.



Oral T.P.١٥

One sure sign to defferentiate between ①&④?

Pupil

Symptoms	Acute conjunctivitis	Corneal ulcer	Acute iridocyclitis	Acute congestive glaucoma
Pain	Discomfort	Stitching	Dull aching (neuralgic pain)	bursting
Vision	Normal (الوحيد اللي سليم)	decreased	decreased	Marked ↓
Dischonge	Mucopur.Or purulent	Watery (lacrimation)	Watery	Watery
General	Absent	Little	Little	Marked (vomiting)
Signs				
(1) Lid	Oedema (++++)	Oedema (+)	Oedema (+)	Oedema (+)
(2) Conj	Cong injaction	Ciliary injection	Ciliary injectin	Ciliary congestion
(3) Cornea	Normal	Ulcer (+ve fl, test)	Hazy + Kps	Hazy (oedema)
(4) A.C	Normal	Flare	Flare	Shallow
(5) Iris	Normal	Muddy	Muddy	Iris bombe
الأهم ← (6) Pupil	Normal (RRR)	Normal orConstricted	Constricted	Semidilated oval
(7) IOP	Tn	Tn or T +	T++	T+++
(8) Fundus	Normal	Normal	Vitreous Haze	Not seen

Treatment

*Local ttt:

Prevent synechia ← **(1) Atropine:** see corn. ulcer (يكتب بالتفصيل من هناك)

(2) Corticosteroids: (drops or oint)

Action: (1) Anti-inflammatory (↓ release of inflam. Mediators by stabilizing lysosomal memb.)

(2) Anti-allergic

comp. تمنع أسوأ (3) Prevent synechia formation (By inhibiting of fibroplastic activity)

(4) Decrease the release of destructive leucocytic enzymes.

Frequenty: frequent during acute stage , then tapers gradually

Side effects on prolonged use: (1)- Secondry glaucoma (OA)

(2) Complicated cataract

(3) Reactivation of dormant organisms (HSV)

(3) Hot formentation: see corneal ulcer

(4) Dark Glasses: for photophobia

* *General ttt:*

1- Systemic steroid

- **Indication** : in severe cases.
- **Dose :** 1 mg/ kg/day.
- **Contraindications** :

Relative : I- Infective cases
ii- Diabetic patients → by anti-insulin effect
iii- Cardiac & renal patients → due to Salt & H_2O retention
iv- Peptic ulcer patients.

Absolute : TB. → ↓ fibrosis → ↓ localization to becomes systemic

2- Systemic antibiotics: in infective cases.

3- NSAI drugs: to decrease prostaglandin synthesis.

4- Analgesics.

5- Immuno-suppressive agents: in steroid resistant cases. → cyclosporine → immurane
→ for immunologic diseases

Causal ttt:

e.g., → control of D.M → ttt of septic foci

* *Ttt of complications:*

(1) 2 ry Glaucoma If due to

(i) acute iritis :Give cortisone – atropine – cidamex-BB → stop formation of Aq.

(ii) Chronic iritis:

1. Ring synechia → do periph. Iridectomy
2. PAS → do ext ernal fistulizing operation.
3. Total posterior synechia:

If the projection is good do sector iridectomy + cataract extraction. لأن ده الحل الوحيد
علشان Aq. يعرف يعدّي (أشيلها كلها) وكمان الحالة
دي بقالها مدة طويلة يبقى أكيد العدسة ← opacified

(2) Complicated cataract: see cataract

(3) Endo & pan – ophthalmitis: see orbit.

Iridectomy

Definition it is removal of a part of the iris

Types

مطلوبة أسماء

1- Peripheral: - Near the ciliary border (not reachign the pupil)

- Indications:
  1. Closed angle glacuoma (see glaucoma)
  2. As a step in → Ext. fist. Op.
     → Cataract extraction

2- Sector: - From near the ciliary broder to the pupil (in one snip)

- Indications as a step in → Ext. fist, op.
  → Cataract ext.

3- Wide basal: - From the ciliary border to the pupil (in 2 snip)

- Indications: Acute cong gl. With → failed med. Ttt with
  → minimal & early PAS (replaced by Ext. fistulizing op.)

4- Visual:

- At the pupil (not reaching the ciliary border)
- Indication: central corneal or lenticular opacities (provided that vision improves after mydriasis)
- Site of choice is (1) down: not covered by lid.
  (2) In : for convergence.
  (3) Small: dazzling

Oral طحن

ثلاث شروط في غاية الأهمية

5- Miscellaneous indications (Bizzare): Shaped

- Any → site, size & shape.
- Indications: (1) Neglected post – traumatic iris prolaps. because iris will be contaminated → fear of endophthalmitis
  (2) F.B. in the iris.
  (3) Tumors of the iris.

D.D of iridectomy:

① Congenital coloboma ② Iridodialysis ③ Melanoma of iris ④ Retro – flexion.

Choroiditis

Choroiditis may be:

(1) Exudative ***(2) Granulomatous*** ***(3) Suppurative***

1- Exudative:

- **Definition:** It is non-specific choroiditis with much exudation
- **Aetiology:** Allergy to endogenous toxins (TB , strept. Toxin).
- **Clinical picture:**

Symptoms:

(1) Meta morphopsia, micropsia, macropsia (due distortion of photo-rec).

(2) Photopsia (due to irritation of photoreceptors by inflammation)

(3) Scotoma (+ve & later –ve)

(4) ↓ of vision (due to vitreous haze & retinal osdema)

Signs:

1- Recent focus	2- Healed focus
- Yellow	- White
- ill- defined	- Well-defined
- Vitreous haze	- Vitreous → clear.

2- Granulomatous

Here → an acutal granulaoma is formed (tubercle or gumma)

3- Suppurative:

(1) Endophthalitis (2) Panophthalmitis (see orbit)

Written

ENDOPHTHALMITIS

مؤجل

Endophthalmitis is a purulent inflammation confined to the intraocular structures, but the outer coat of the eye (cornea, sclera) and Tenon's capsule are free.

Classification:

1- Acute postoperative endophthalmitis: is the most common entity. It may be infectious, (2ry to bacteria) or sterile by chemicals e.g. powder from gloves.

2- Delayed postoperative endophthalmitis : 2ry to bacteria (P acne) , fungi & in patients with external fistulizing procedures.

3- Traumatic, as in penetrating injuries if antibiotics were not started early.

4-Endogenous (Metastatic) endophthalmitis as in immuno-compromised pts.

Etiologic agent

1-Bacterial: - Gram+ve: Staph epidermidis, Staph aureus.

- Gram -ve (Pseudomonas, Proteus, Escherichia coli).

2- Fungal: Candida, Aspergillus.

Clinical picture:

Symptoms: 1-Pain. 2- ↑ hyperemia. 3- ↓ of vision

Signs: 1- Lid edema. 2- Conjunctiva: Ciliary injection

3- corneal edema. 4- A.Ch.: hypopyon

5- Vitreous reaction.

To differentiate between bacterial and fungal endophthalmitis, the following criteria should be considered.

1) Bacterial

i- Sudden onset (1-7 days postoperatively), rapid progression.

ii- Severe: Pain , redness & Lid edema .

iii- Rapid loss of vision .

iv-Hypopyon and glaucoma.

2) Fungal:

i- Delayed onset (8-14 days or more).

ii- Less: pain , redness and edema.

iii- Good light perception in early cases.

iv- Transient hypopyon withLocalized grayish white condensations in the vitreous (snowballs).

3) Sterile:

i- May look like bacterial or fungal infection.

ii- Foreign body (sponge filaments, powder) may be seen inside the eye.

Management of bacterial endophthalmitis:

1- Hospitalization.

2- Vitreous aspiration for smears (Gram and Giemsa), cult. and sensitivity.

3- Anterior chamber paracentesis for smears, culture and sensitivity

4- Antibiotics:

a) Intravitreal:

i- 1mg of vancomycin (to cover gram +ve organisms), plus

ii- 2.25mg of ceftazidime or 0.4 mg of amikachin (for gram –ve) .

b) Subconjunctival:

i- 25mg of vancomycin.

ii- 100mg of ceftazidime or 20 mg of amikacin.

c) Topical (drops)

i- Vancomycin : 50 mg/ml

ii- Ceftazidime : 50 mg/ml or fortified gentamycin drops 15 mg/ml.

d) Systemic

i- amikacin 14mg/Kg i.v or i.m every 8 hours for 5 days,

ii- ciprofloxacin 500mg every 12 hours for 5 days.

5-Steroids : may be added AT LEAST 24 HOURS AFTER STARTING INTENSIVE ANTIBIOTIC THERAPY

6- Vitrectomy :is done in severe cases not responding to other measures.

N.B. in fungal endophthalmitis: use Amphotericin B local & systemically.

Ocular Pharmacology

I) Mydriatics

It includes:

1- Parasympatholytics	2- Sympathomimitic
1- Atropine sulfate 1%	1- Phenyl-ephrine 2.5-10%
2- Homatropine hydrobromide 1%	2- Adrenaline (1/1000 subconj.soln)
3- Hyoscine hydrobromide ¼ %	
4- Cyclopentolate hydrochloride 1%	
5- Tropicamide (mydriacyl) 1%	

Indications: Oral

1- Treatment of :
- Corneal ulcers.
- Iritis
- Accommodational squint in children < 3 years

2- Diagnostic :
- Before fundus examination & Retinoscopy
- Provocative Test in Ac glaucoma → Dark room √ لوقتا
- Post-mydriatic vision Test: before visual Iridectomy.

3-Operations:
- Preoperative : as in cataract & RD surgery.
- Postoperative : as in cataract,glaucoma & RD surgery

Side Effects:

1- Atropine Toxicity:

due to systemic absorption

Cl.picture:
- **F**ever – **F**lushing of face
- **F**its – **F**ast heart (tachcardia)
- Dry mouth & skin

ttt: 1- cold compresses 2- Pilocarpine 10 mg IM

2- Atropine Sensitivity:

- occurs with drops or ointments
- clinical picture: allergic dermatitis – Follicular conjunctivitis
- ttt : stop atropine – use cyclopentolate – topical steroids

3-Dangers:

i- Angle closure glaucoma in eyes with narrow angle

ii- Prevent monitoring of the pupil in comatosed patient

iii- Prevent monitoring of the pupil during anaethesia.

iv- Behavioral disturbances (hallucination) especially with cyclopentolate.

(II) Miotics

Includes:

a- Direct Parasympathomimic	**b- Indirect Parasympathomimic**
1-Pilocarpine nitrate1-4%	1- Eserine salicylate ¼ -1/2 %
2- Acetyl Choline (Intracameral)	2- DFP 0.1%

c- Double action (direct & Indirect): Carbacol

Indications: Oral

1-ttt of - 1ry glaucoma (CAG& OAG)

– Some cases of accommodational squint. → to take iris away from the membrane

2- Before some operation : - Goniotomy. – Filtering surgery

- Keratoplasty - Laser Iridotomy

3- After some operations : - Goniotomy - Cyclodialysis

لازم علشان يفضل membrane
بعيد عن بعض

Side Effects :

Systemic : Headache, GIT colics , Bradycardia

Local : see glaucoma

CORTICOSTEROIDS

Corticosteroids form a very important group of drugs that have many indications with serious side effects on prolonged use.

Indication:

1- Lids: allergic dermatitis, insect bites.

2- Conjunctiva: Allergic conjunctivitis. (phlyctenular, spring cattarh)

3- Anterior Segment:

- Keratitis (interstitial ,deep).
- Episclenitis, sclenitis.
- Iridocyclitis.
- Acute phase (1st 10 days) of chemical injuries and burns.

In all of the above corticosteroids are used topically, or by local injections.

4- Posterior Segment:

In these conditions topical steroids are not effective and either systemic or retrobulban injections are used:

i- Posterior uveitis.

ii- Anterior ischemic optic neuropathy where mega doses of steroids may be used. The patient is hospitalized and doses as high as one gram are given intravenously under the supervision of an internist.

iii- Sympathetic ophthalmitis.

5-Postoperative: to decrease post operative inflammation and also to prevent graft rejection in cases of keratoplasty.

Dose of systemic steroids:

The usual dose of systemic steroids ranges from 1-2 mg /kg /day i.e. 60-120 mg for adults. In certain conditions up to 1000 mg can be infused daily (mega dose).

Dangers of local steroids: Written & Oral

1- Steroid induced glaucoma.

2- Steroid induced cataract (post subcapsular).

3- Increasing susceptibility to infections.

4- Reactivation of dormant organisms e.g. herpes virus

5- Delaying wound healing.

Dangers of systemic steroids (prolonged use): Written & Oral

1- Peptic ulceration.

2- Steroid induced diabetes.

3- hypertension due to salt and water retention.

4- Steroid induced cataract.

5- Muscle wasting, osteoporosis.

6- Reactivation of dormant infections (T.B).

7- Cushingoid state.

8- Psychic disturbances.

9- Sudden stoppage after prolonged use may lead to acute adrenal insufficiency, so either gradual withdrawal or injection of ACTH is given at the end of treatment.

OCULAR TUMORS

Tumors may arise from extraocular structures such as the lacrimal gland, optic nerve, lids and conjunctiva, or from intraocular structures such as the choroids and the retina.

The more common extraocular tumors include mixed lacrimal gland tumors, basal cell carcinoma of the eyelids, squamous cell carcinoma of the conjunctiva and glioma of the optic nerve.

Benign intraocular tumors are very rare, the more common malignant tumors may arise from the choroids (malignant melanoma) and the retina (retinoblastoma).

INTRAOCULAR TUMORS

MALIGNANT MELANOMA OF THE CHOROID (MM)

It is the most common primary intraocular tumor in adults. The average age of patients with choroidal melanoma is 50 years. It is rare in black races.

Clinical features:

The tumor appears as a unilateral, elevated, brown oval shaped mass. It may be mottled with dark brown or black pigments.

Early it may be asymptomatic unless it arises near the macular area.

Later the patient may complain of diminution of vision due to:

i- Secondary retinal detachment (malignant detachment).

ii-Secondary glaucoma

In late stages: it may extend outside the globe into the orbit producing proptosis.

Diagnosis is based on

1- fundus examination.

2- Fundus photography is important for documentation and follow up.

3- Ultrasonography : I- determines the size and height of the tumor

II- differentiates MM from other tumors e.g. choroidal nevus and choroidal hemangioma.

Differential diagnosis: from

1- choroidal nevus which is benign.

2-choroidal secondaries due to metastases. Since metastases are frequently bilateral, examination of the fellow eye is extremely important.

3- Malignant detachment from primary rhegmatogenous RD

Management:

1- Observation: Fundus,photography & US) should be considered for:

i- Eyes with small lesions (differentiation from nevus is difficult).

ii-Single eye with slowly growing tumors. .

2- Small lesions: I- Peripheral : Local resection .

ii- near the posterior pole. Radioactive plaques fixed to the globe

3- Large melanomas : Enucleation is indicated.

External beam irradiation prior to enucleation is done to lessen the risk of metastatic lesions.

Transpupillary thermotherapy (TTT): it is a recent method of treatment. The principle is to apply heat to the tumor tissue after pupillary dilatation using a diode laser. This leads to cellular destruction and inhibition of DNA synthesis by the tumor cells and subsequently decrease in the tumor size.

RETINOBLASTOMA

- It s the most common primary intraocular malignancy in childhood.

***Incidence:**

- It occurs in about 1 in 20,000 live births.
- Age : always presents prior to the age e of 3 years.
- A positive family history is present in only 6% of cases .
- The tumor may be bilateral in 20% of the cases.

*** Etiology** : It s thought to be caused by a mutation in a gene on chromosome 13 resulting in the loss of an anti-oncogene.

*** Clinical features**

Retinoblastoma may present as

1- Leukocoria (from Latin leukos=white and coria=pupil):

white papillary reflex, accounts for 65% of cases.

2- Strabismus (squint) : if the tumor affects the macular area.

3- Secondary glaucoma

4- Proptosis due to extraocular extension.

5- Accidental discovery on routine examination.

Diagnosis: is based on:

1- Fundus Examination: with maximal pupillary dilatation, preferably under general anesthesia. It is of extreme importance to examine both eyes due to the relatively high incidence of bilaterality.

2- X-ray: may show tumor calcification.

3- Ultrasonography.

4- CT scans.

Treatment:

1- Small tumors: i- If central : do Photocoagulation .
ii- peripheral Transscleral cryotherapy or diode laser .

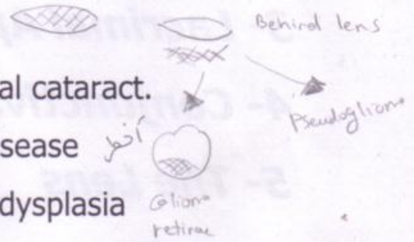
2- Medium tumors : Radiotherapy or trans-pupillary thermotherapy

3- large tumors : Systemic chemotherapy and Enucleation with excision of a long stump of the optic nerve .

C سفنوي هام جداً

Differential Diagnosis of leukocoria in infants

1-Retinoblastoma.
2-Congenital cataract.
3-Retinopathy of prematurity (ROP)
4- Coats disease أنظر
5- Persistent Hyperplastic Primary Vitreous
.6- Retinal dysplasia

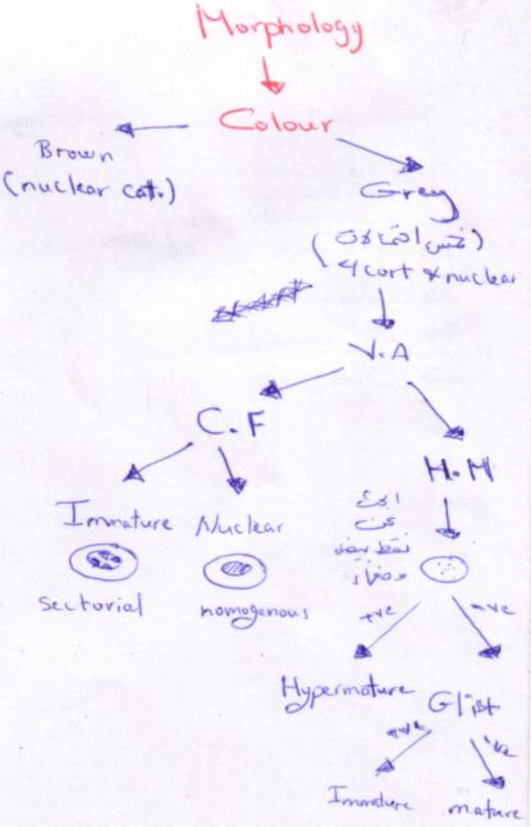


PHAKOMATOSIS

This is a group of diseases characterized by the appearance of multiple small benign proliferations. These proliferations affect the eyelids, intraocular structures, face as well as other organs of the body. The most common diseases are:

1- Neurofibromatosis.
2- Sturge-Weber Syndrome.
3-Tuberous sclerosis.
4- Von Hippel-Lindau disease.

D.M →
① Corneal ulcer
② Complicated cataract



Ocular manifestations to over exposure to U.V rays:

in Conjuctiva
① Pink cat
② Spring catarrh
③ ~~Senile cataract~~ pterygium
④ Senile cataract Pink...
⑤ Dendritic ulcer

√ Para *
√ Pathology *
+ فارما (١) ← كمية
+ فسيولوجي (٢)

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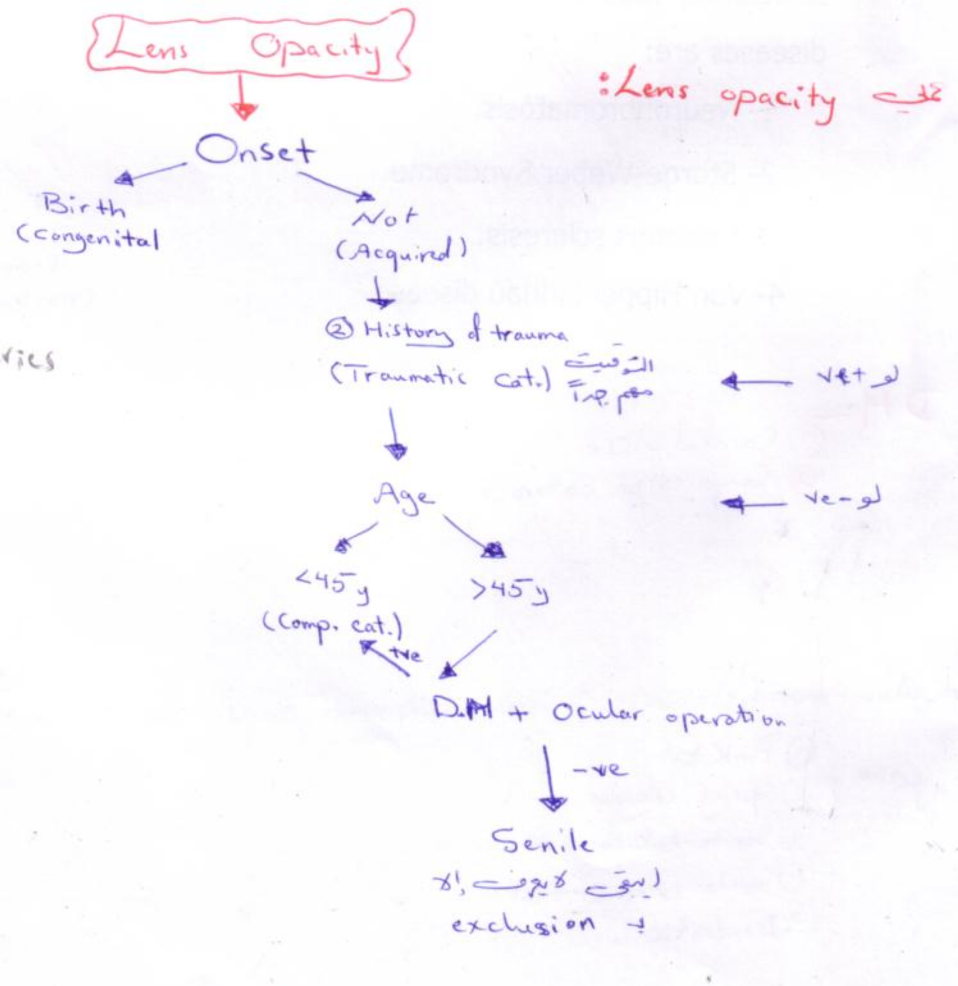

Summary
① → Dysthyroid
② → Scotoma
③ → VA measurement
④ → injuries

→ Oral Q
→